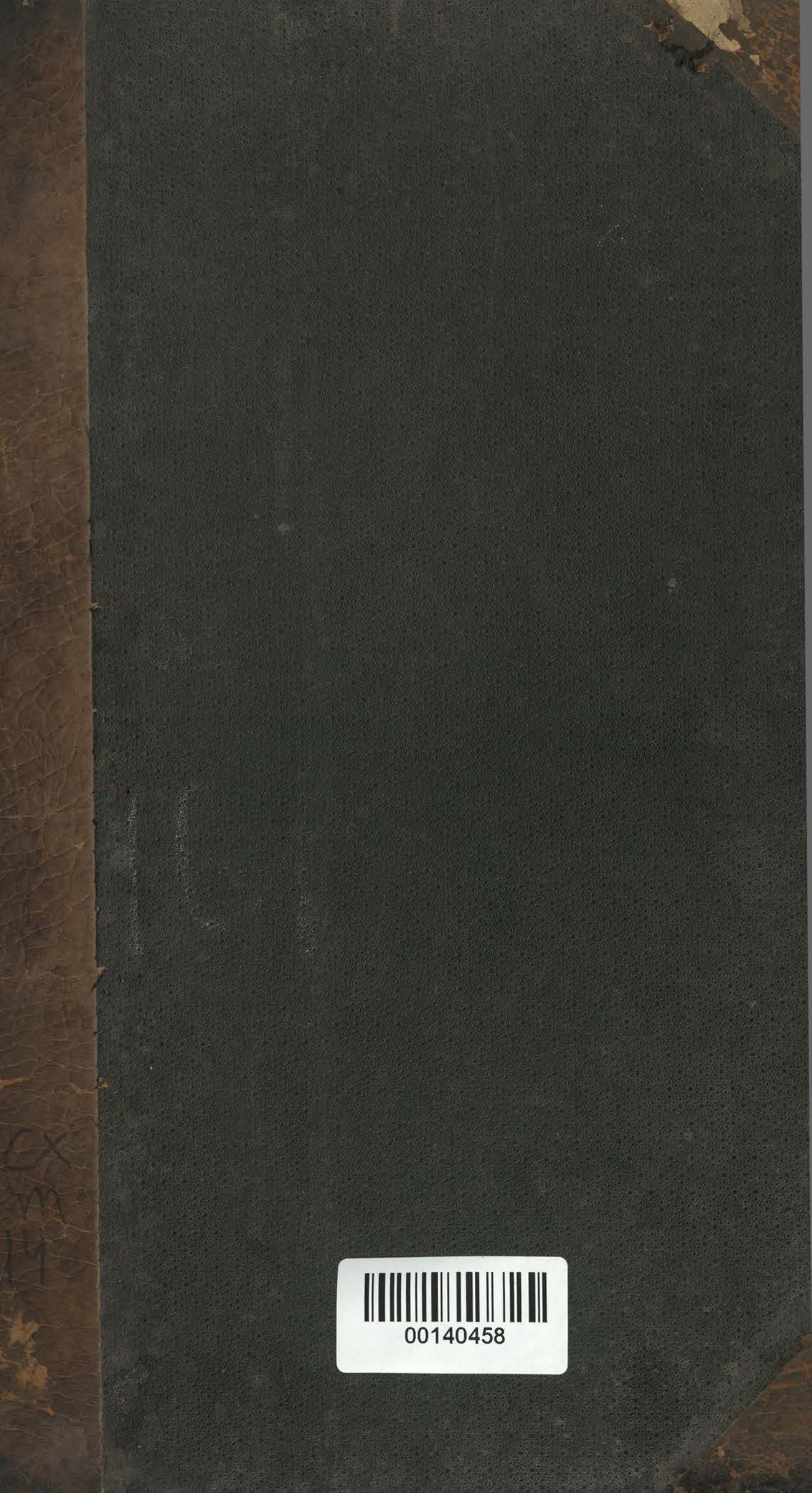
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BOMBAY BRANCH
OF THE
Royal Asiatic Society.

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Government of Maharashtra

on 01 February, 2020

Nominations for Medical & Surgical &c.

Sanitary Commission, Bengal Report
1865-66

Army Medical Department.

Sanitary Improvements in India 1859-70

Sanitary Commission, Bengal; 1864-65

Royal Sanitary Commission of 1863

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The estimate of the Commission for all India was 84 in 1,000; a "heavy "ratio of sickness," which Dr. Leith thinks inapplicable to the Bombay Presidency.

No returns exist, but it is found that there is a certain relation between the "sick" and the dying; and Dr. Leith shows, that while in the four years (1860–3) the mortality was at the rate of 21, the sick were 73 in 1,000. Now, following out this proportion, and taking his figures, if 21 deaths gave 73 constantly sick, 29 deaths annually, his rate of mortality from 1849 to 1863, would imply that the sick were 101 per 1,000 of the strength. This is Annesley's proportion,* and it is higher than the low rate (84) which the Commission intentionally adopted.

It was a current opinion among Indian writers, the able author of "Vital "Statistics of the Anglo-Indian Armies," for instance, that the "European "army in India has hitherto disappeared in about 13½ years." This result, deduced from the facts by a mathematical oversight, and some unintentional exaggerations of other writers, the Commission corrected;† and to calculate the prevailing loss of men by death, invaliding, and other causes, the life table for the English soldier in India, and the greater part of the deductions, were based upon the facts observed in the last available 10 years, 1847–56, when the current annual rate of mortality was 51·2 per 1,000 in India; namely, 67 in Bengal, 39 in Madras, and 38 in Bombay.‡

Public attention has been directed to the health of the army; the measures which Lord Herbert and Miss Nightingale originated began to bear fruit; the appointment and the inquiries of the Royal Commission gave an impulse to sanitary affairs in India; and finally, the new stations in Oude and the Punjab opened to the Bengal army some of the advantages of a healthier country, which had before been realised by the European forces of Madras and Bombay. Thus it happened, as subsequent returns prove, that the mortality was reduced in the year 1862 to 35 per 1,000, in the year 1861 to 37 per 1,000, and in the year 1862 to 26 per 1,000.§ During the latter year, 28 per 1,000 were invalided from India for discharge or for change of climate.

The mortality per 1,000 of Bengal was at the rate of 28, of Bombay 25, and of Madras 21.

This most happy occurrence, which has come to light since the inquiry of the Commission commenced, is cited by a certain class of writers to prove that the Commission, in their Report, overstated the deplorable mortality which prevailed during the present century down to the year of the mutiny. Other critics, by excluding years of war, as well as even the deaths from cholera, and selecting years after war had cleared the army of invalids, contrived to exhibit low rates of mortality; but none have impeached the accuracy of the calculations of the Commissioners. They have only reasoned in this inconclusive form:—"The mortality in the years since the Commission was appointed has "been lower than 69 in 1,000, therefore that rate could not have accurately "represented the mortality of soldiers in India up to the date of the last "returns." The answer is, that the mortality which the Commission cites is an incontestable fact.

With regard to recent lower death-rates, it is necessary to bear in mind that numerical records made for short periods (still more for a single year) are usually either in excess or in deficiency. And no general law, either as regards sickness or mortality, can be deduced from them. By selecting particular years, all the stations even on the West Coast of Africa might be shown to be among the healthiest places in our foreign possessions.

It is always possible, by selecting years and localities skilfully, to prove that the mortality of the troops in a great country is either high or low. The Commission was well aware of this; and to avoid all such misleading fallacies, based their estimate on returns during long series of years; displaying, however, the facts for each year, and for each Presidency. The Commission not only described the mortality of each Presidency separately, but, as far as was practicable, of each station, each regiment, and each arm of the service.

Dr.

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* 8vo Report (1864), p. 20

† 8vo Report (1864), pp. 12–14.

‡ 8vo Report (1864), pp. 133–5.

§ Dr. Balfour's Reports to the Director General of Army Medical Department, on Returns for

Dr. Leith is apparently able to show that in 1863 the mortality was so low as 12 in the 1,000 in Bombay (*p.* 12). This result may require some correction for deaths not included by Dr. Leith, as he makes the mortality of Bombay in 1862, the previous year, 20·8, while Dr. Balfour shows that the mortality was 24·6* per 1,000 in that year.

But allowing for any necessary correction, the reduction of the mortality of the Bombay army, which for 56 years had been 66 per 1,000 (68 in the 10 years 1840–50 and 31 in 1850–6), to (say) 15 per 1,000 is a most gratifying fact, particularly as Dr. Leith is able to say that "the progressive decrease of "mortality may reasonably be attributed to the increasing attention that has "been paid to the welfare of the soldiers in barracks and in hospital" (*p.* 12).

So far as the Commission could discern, there was less disposition among Indian authorities to believe that the mortality of European troops had been high, particularly during active service, than to admit that the mortality could possibly be reduced below the past standard; it was all the fault of the burning implacable sun, according to popular belief. The Commission addressed itself, therefore, especially to this branch of the inquiry; and they proved (1) that in several of the hottest stations of India the mortality had been as low as 30 and 20 in 1,000 during a series of years; (2) that the mortality was mainly due to certain diseases which are the result of various excremental organic compounds, and marsh malaria, producing the same class of diseases in Europe; (3) that the mortality of the population from the same class of diseases was formerly higher in London than it is now in Calcutta; (4) that the dietary, regimen, barracks, sanitary arrangements, particularly in the field, had been inconceivably defective during a long series of years; (5) that the native cities and bazaars of India were in a deplorable sanitary condition, that they were centres of disease, but that the native troops of the East India Company lost less than 20 per 1,000 by death; (6) that the military officers of the Company died at the rate of 31 in 1,000, while the civil servants exposed to the climate died at the rate of 20 in 1,000.

All this seemed to show that if British soldiers died at the rate of 69, or even 50 per 1,000 annually, it was not the uncontrollable "climate" that killed them.

From these and other elaborate inquiries, the Commission concluded that the "climate" of India includes various elements, and that the mortality of our army in India and of the European race is due chiefly to those elements which are to a large extent under control. The diet of the men could be improved, the excessive doses of poisonous spirits under a burning sun could be commuted into other drinks, the mind of the soldier could be occupied; troops could be transferred from stations irreclaimably bad to stations proved by experience to be comparatively salubrious, and susceptible of being rendered more salubrious still; the same sanitary measures, too, as had driven plague from Europe, and mitigated malarious fevers, must, it was inferred, produce the same salutary effects in Bombay, Madras, Calcutta, and the other cities of India.

Upon all these grounds the Commission saw a brighter prospect before the English Army in India.

It is thus described:—

"We have, in the course of our inquiries, endeavoured to ascertain the pro-"bable excess of mortality in the Indian Army, occasioned by the sanitary "defects we have described, as well as the reduction of mortality which would "follow on the adoption of improvements in existing stations, combined with "the use of hill stations, and the abandonment of as many unhealthy localities "as may be practicable. The statistical evidence shows that the mortality "varies from 11½ per cent. in the most unhealthy to about 2 per cent. in the "most healthy places, even in their present unimproved state. It has been "estimated that the lowest of these rates, or 2 per cent. (double the rate at "home stations since the introduction of sanitary improvements) may be taken "as the possible mortality under improved sanitary conditions."†

Nay, they go further, and hypothetically predict a still better state of things:—

"A careful examination of the causes of disease, and of the character of "diseases

* Dr. Balfour states the strength of the troops in Bombay to be 11,870, and the deaths among them in India to be 274, while 18 of the invalids died. Dr. Leith makes the strength 11,97[illegible] the deaths in India 249. (*Report of Army Medical Department*, 1862, p. 12[illegible]
[illegible] Report (1864) [illegible]

"diseases prevalent at the more healthy stations, would lead us to hope even-
"tually for a greater saving of life than we have here estimated. Causes of
"disease, such as exist at these stations, would even at home be sufficient to
"account for one half of the 20 per 1,000; and if the time should ever arrive
"when, under the influence of improved culture, drainage, and sanitary works,
"India should be freed from the local malaria which exists everywhere there
"now, as it once did in some form or other over Europe, we may cherish the
"hope of realising what statistical inquiries appear to point to, namely, that
"the natural death rate in times of peace of men of the soldiers' ages in India
"will be no more than 10 per 1,000 per annum."

Now, although Dr. Leith and other writers have not proved that the mortality of the British Army in India, down to the date of the inquiry, was less than the calculations of the Commission indicate, they have shown that the somewhat sanguine prediction of the Commission, that a future low rate of mortality is to be obtained in India, may be realised, and Dr. Leith tells the Government that the mortality in Bombay is at the rate of 12 in 1,000. He ascribes it to an unusual degree of freedom from cholera, and to "increasing attention to the "welfare of the soldier." But very much remains to be done before such a rate can become permanent.

21. After a careful consideration of Dr. Leith's report, although we are glad to find that there has been a lower death rate since the Royal Commission began its work, and although there have been some improvements in a few matters of detail regarding barracks and hospitals, we are of opinion that the report contains no satisfactory evidence that any material improvement has yet been effected in the sanitary condition of the Bombay Presidency.

In comparing its statements with the recommendations of the Royal Commission, we find—

(1.) That the sale of spirits in canteens, at the date of the report, was pretty much in the same condition as represented by the Commissioners. But we are somewhat surprised to find that at Colaba Sanitarium, where men are sent for the recovery of their health, "a quart of malt liquor and two drams of spirits are allowed to be bought by each of the invalids in the barracks at the canteen," and that, at Ahmednuggur, the quantity of spirits which the men can purchase at the cavalry canteen appears to have been doubled since the date of the report made to the Royal Commissioners. Surely this requires reform.

(2.) That the means of instruction, exercise, and recreation are still very deficient.

(3.) That invalids are not yet embarked for home with the necessary speed.

(4.) That works of drainage and water supply have still to be carried out at all the stations, that the existing water sources still require to be analysed, and that means of filtration, combined with improved distribution of water, have still to be provided.

(5.) That plans for improving the existing barracks and hospitals, as nearly as practicable in conformity with the principles laid down by the Royal Commission for building new barracks and hospitals, have yet to be prepared and carried out.

(6.) That the ventilation of barracks and hospitals has still to be completed on sound principles.

(7.) That a sufficient amount of glazed window space has still to be provided for lighting barracks and hospitals, and that gas has still to be introduced.

(8.) That the ablution and bath accommodation for barracks and hospitals is still very deficient, and the supply of water for cleanliness quite inadequate. [Dr. Leith shows that at Hyderabad, on the banks of the Indus, the allowance of water is only five gallons per head per day, and even shower baths cannot be used.]

(9.) That drinking fountains, supplied with pure, cool, filtered water, have still to be provided.

(10.) That barrack cook-houses are pretty much in the state they were.

[redacted]quence of the want of dra[redacted]l wate[redacted]

improved latrines, water-closets, and urinals cannot be provided for barracks or hospitals.

22. With the view of supplying these deficiencies, we would recommend as follows:

(1.) That each station be carefully examined by competent sanitary and engineering officers, and that a careful survey be made, and a well-digested scheme for improving the station be prepared and submitted for sanction. This scheme to include—

(2.) Levelling, filling up, paving, and otherwise improving the surface drainage of the station.

(3.) Drainage and water supply, including sub-soil drainage, house drainage, filtration, and distribution of water over the station.

(4.) Improving existing barracks and hospitals, including raised floors, with ventilation beneath, or providing upper floors for sleeping rooms, in localities where it may be necessary to do so.

(5.) Ventilation of barrack rooms and hospital wards, on the principles laid down in our "suggestions." Improvements in lighting barracks and hospitals.

(6.) Fixing, *by regulation*, the superficial and cubic feet to be allotted p e bed in barracks and hospitals, the amount being regulated according to the healthiness or otherwise of the locality, on the principles laid down by the Royal Commission. In doing this, rooms or wards unfit or doubtful for occupation should be excluded; and the amount of additional barrack and hospital accommodation necessary to admit of the regulation being complied with should be stated.

(7.) Sub-dividing long barrack rooms and sick wards, so as to have no more than from 20 to 24 beds per room, and providing that each room is completely cut off from the others, and ventilated separately.

(8.) Improved latrines, water-closets, and urinals for barracks and hospitals.

(9.) Improved and extended ablution and bath accommodation for barracks and hospitals.

(10.) Improvements in cook-houses, hospital kitchens, and cooking apparatus.

(11.) The provision of sufficient accommodation for exercise, recreation, and instruction in the way of gymnasia, workshops, reading and day rooms, soldiers' gardens, covered ball courts, &c.

23. It is impossible for us to do more than indicate generally the more important points of such an inquiry. Nothing short of actual examination on the spot, by persons competent to conduct such an examination, is of any real use in determining the nature of the influences affecting the health of troops at any given station, and the nature of the works required for improving its sanitary condition. Such an inquiry, followed by a carefully drawn up Report on each station, accompanied with the necessary maps, plans, and surveys, affords the only basis on which a practical opinion could be arrived at as to the extent and class of improvements required.

(signed) *Richard Airey*, Quartermaster General and President.
Douglas Galton,
Assistant Under Secretary of State for War.
John Sutherland.
T. G. Logan, Inspector General of Hospitals.
Edward Belfield,
Deputy Director of Works, War Office.
Proby T. Cautley, Member of the Council of India.
J. Ranald Martin, Inspector General of Hospitals.
Robert Rawlinson, Local Government Act Office.

J. J. Frederick, Secretary,
Barrack and Hospital Improvement Commission,
War Office, 6 January 1865.

leave out the years of the Crimean War, in investi-
ortality of the British Army, neither could the Com-
ears of war in India from their survey. The suggestion
mortality of the army, the sole course is to avoid war in
o discussion.

ns stated, the Commission did not include the years of the
and of the mutiny, for, imperfect as the returns in their posses-
the returns by the commanding officers of regiments, published in
pages 757–79 of Vol. I., folio Report), convinced the Commission
the returns been brought down to the latest period, the rate of mor-
ould not have been lowered by that operation.

s is evident in the Table A. appended to these remarks, by which it
ars that in the military year April 1857, the 64th Regiment engaged in
sia lost in deaths 237 men; the 70th, 117 men; the 1st battalion of the
th, 194 men; the 81st, 170 men, and other regiments also great numbers.
the year following, 12 regiments or battalions lost 105, 384, 223, 280, 128, 175, 107, 106, 228, 284, 140, and 121 men out of strengths often below 1,000 at the beginning of the year. In the military year 1859, 17 regiments lost 116, 187, 107, 104, 120, 123, 118, 113, 141, 176, 123, 139, 112, 112, 165, 141, and 148 men in India; and of other regiments the losses were heavy. After the war, the invalids and disabled, many of whom died, were sent home in large numbers, and thus reduced the deaths in India during the following years.

The following Table, not including all the deaths in India, shows that the mortality during the excluded years must have been higher than the average of the previous years of Indian experience :—

Military Years, ending 1st April.	Estimated Mean Strength.	Deaths.	Mortality per 1,000.
1857 - - - - - -	21,260	1,504	70·74
1858 - - - - - -	22,057	2,956	134·02
1859 - - - - - -	42,194	4,355	103·21
1860 - - - - - -	62,110	2,329	37·50
3 years 1857–59 - - - -	85,511	8,815	103·09
4 years 1857–60 - - - -	147,721	11,144	77·51

Note.—The facts from which this Table is derived will be found in Vol. I. of folio Report, pp. 757–79, "Statistics of "regiments which have served in India;" an analysis of which is given in the Table A. annexed to this paper, and referred to above.

The estimated mean strength in each of the years is obtained by taking the mean of the strength at the beginning and end of the year, excepting in 1857, which is the number given as the actual strength on the 1st April of that year.

These Regimental Returns will be of use to the future historian of the war of the mutiny; but the Commission, desiring to avoid anything like over-statement of the case, did not bring the mortality of any regiment during the years 1857-8-9 into account; they only paid a just tribute to the men whose military virtues were so loudly proclaimed by their deaths :—

"It is impossible to read the losses of particular regiments in the war of the "mutiny without being struck by the inextinguishable valour of the Briti
ldier; but it was disease and not the enemy that killed him; for o
en dying among regiments in India prior to the mutiny, or ser
y 586 were killed in action or died of wounds." (8*vo I*

Statistics of India, which Lord Herbert's
operation in 1859, and the Indi
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" Royal Army with that of the late Company, or of me
" men in India, and by the confusion of invaliding fron
" charge of soldiers whose terms of service have expired.
" for some time appear to have included only the deaths in
" After carefully examining all the documents at our disp
" for analysis the nominal rolls of strength and casualties at th
" relating to the late Company's European troops. The collectio
" casualty rolls at the India House was 'compiled upon the princ
" 'counting for every man becoming ineffective in the year.' Verifi
" signatures of the commanding officers and adjutants of corps, the
" perfectly intelligible and substantially correct; they have been, th
" analysed elaborately for the purposes of this inquiry. The troops
" Company, unlike the Royal Army, served only in India, where they rema
" until death, or until they returned home. The deaths in the 57 ye
" 1800–56, among all the Company's non-commissioned officers and men,
" cluding invalids in India, amounted to 40,420 out of an aggregate of 588,82
" years of life, obtained by adding up the average annual strength in those
" years; so the annual rate of mortality has been 69 in 1,000 during the
" present century. The mortality rate was as high as 134 in 1804, in the
" first Mahratta war, and it was as low as 41 in 1852. It was high again in
" the years of mutiny, and it has been subsequently lower than the Indian
" standard. From the rate of 55 in 1700-99, the rate rose to 85 in the 3
" years, 1800-29; and the mortality fell to 58 in the 27 years, 1830–56;
" that the death-rate of the British soldier, since the first occupation of the
" country down to the present day, has oscillated round 69 per 1,000. If the
" mortality is set down at 69 in 1,000, it follows that, besides deaths by natural
" causes, 61, or taking the English standard, 60 per 1,000 of our troops perish
" in India annually. It is at that expense that we have held dominion there
" for a century; a company out of every regiment has been sacrificed every
" 20 months. These companies fade away in the prime of life, leave few
" children, and have to be replaced at great cost, by successive shiploads of
" recruits." (*Report, 8vo Edition of* 1864, *pp.* 9 *and* 10.)

It will be observed, that the mortality, deduced from the latest War Office Returns which Sir Alexander Tulloch could give in, closely agreed with the mortality deduced by the Commission from still better materials, the nominal returns of the Company's European troops. By the one, the mortality of our European troops was 70, by the other 69, in 1,000.

The soldiers who were invalided from the Royal Army and from the Company's force included many who laboured under slow fatal diseases, such as chronic dysentery or consumption, which were contracted in the service. The Commission did not bring them into account; yet the returns showed that, while in a strength of 1,000 the annual deaths during 57 years were at the average rate of 69 in 1,000, the other casualties were 82 in 1,000, making the total "casualties" from all causes, including invaliding and discharges, 151 in 1,000.* The Commissioners only brought 69 per 1,000 into account.

The Commission discussed the effects of war in a special chapter,† and showed that the years of war were those in which the mortality was generally highest, but that the greater part of this mortality was the direct effect of cholera and other diseases, leaving a small proportion from deaths in battle and wounds.

Sir Alexander Tulloch, who estimated the mortality of the Royal Army at 70 deaths in 1,000, referred 10 of the 70 to casualties in the field; and the ommission was of opinion, that more than 10 of the 82 men discharged fo r casualties, including chronic maladies, would die of diseases ind

evident that the mortality of an army in war cannot b ation of the general mortality to which armies dly that the deficiency of their sanitary c

folio), p. 531. Th

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R Majesty's Indian Forces, having
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general examination in these sciences will be elementary, and will embrace a very range of technical terms. At the written examination, a considerable number tions will be put, with the view of allowing each Candidate to select such as he has attended to, and thereby of enabling the Examiners to ascertain rticular departments of science in which the verbal examination should be ed.

h those Candidates who have attained proficiency in any branch of these sciences, th rbal examination will be pursued in the branch selected, so as to ascertain the full of their knowledge.

NAMES of PERSONS, being NATIVES of INDIA, or of MIXED RACES, appointed as MEDICAL or SURGICAL OFFICERS in the several PRESIDENCIES of BENGAL, MADRAS, and BOMBAY, from the 1st January 1857 to the present Time; distinguishing the Date of every such Appointment.

NATIVES.

Bengal.	Date of Appointment.
Rajendra Chundra Chundra - -	27th January 1858.
Gopal Chunder Dutt - - -	1st October 1860.

Bombay.	
Rustomjee Byramjee - - -	28th January 1857.

MIXED RACES.

It is believed that the following were of mixed race, but there is no docu evidence at the India Office to that effect; viz.:—

Bengal.	Date of Appointment.
Mark Henry Lackerstein - - -	10th February 1859.
Edwin Clement Bensley - - -	Do.
George Cocher Chesnaye - -	Do.
Alexander Rainy Brotchie - - -	20th January 1860.
Richard Thomas Lyons - - -	1st October 1860.

Madras.	
Charles Robert Georg[illegible] Parker - -	20th January 18[illegible]
Daniel Kearney - - - -	Do.
Frederick Duckwo[illegible]n - - -	1st October 18[illegible]

Bombay.	
Henry Alf[illegible]d Lewis - - -	1st October 1860.

COPIES of all APPLICATIONS addressed by BRITISH SUBJECTS, born in INDIA, Secretary of State for INDIA and to the Secretary of State for War, for per to be allowed to compete, at public Examinations, for Employment i MAJESTY'S MILITARY MEDICAL SERVICE; of all REPLIES to such APPLIC and of all CORRESPONDENCE consequent thereon; of the OFFICIAL REPORTS of the MEDICAL OFFICERS appointed to examine the State of Health of the several Applicants; and of all REPORTS of MEDICAL BOARDS appointed to re-examine the several Applicants.

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	of Medical Officers appointed to examine the state of health of British subjects born in dia, applicants to be allowed to compete for employment in Her Majesty's Military Medical rvice	49
	port of Medical Board appointed to re-examine certain applicants	49

No. 1.

ONDENCE relative to the general Question of admitting Natives of India to the Army Medical Service.

Army Medical Department,
24th November 1860.

ence to previous correspondence on the subject of the competitive candidates for appointments in Her Majesty's British and Indian Medical the honour to solicit the instructions of the Secretary of State for War, didates above the age of 26, who state that they have been studying ter the Indian Medical Department, on the faith of the regulations of itting gentlemen up to 28 years of age, may be allowed to compete at ation.

that I make this inquiry to enable me to answer numerous applications eceived from gentlemen, who state that they are thus circumstanced.

I have, &c.
(Signed) J. GIBSON,
Director General.

Military Correspondence,
&c. &c.
Pall Mall.

War Office, 1st December 1860.

VE laid before the Secretary of State for War your letter of the 24th instant, in you inquire whether candidates for appointments in the Army Medical Service, ve been studying with a view to enter the Indian Medical Department, on the regulations under which they could be admitted up to 28 years of age, may be owed to compete at the next examination, though above the age of 26.

In reply I am to acquaint you, that under the circumstances Mr. Secretary Herbert considers that the proposal is only fair and reasonable, and should be adopted.

I am, &c.

The Director General, (Signed) De Grey and Ripon.
Army Medical Department.

War Office, 10th January 1861.

directed by the Secretary of State for War to transmit to you for the considera-
tion of Sir Charles Wood the enclosed copy* of a letter from Mr. M. Beramjee, in reference to the application to natives of India of the regulation which requires that candidates for admission to the Army Medical Service shall not be married men.

*Letter of 30th Novembe 1860, page 26

This application has raised the more important question as to the rule which should be laid down in reference to the admission of natives of India to medical appointments with the army. They are clearly unsuited for general service, and ought therefore only to be allowed to compete for local appointments, and with native troops.

Mr. Herbert will be glad to be furnished with the opinion of Sir C. Wood on this subject, and at the same time to be informed whether any, and if so, what expectations have been held out to the students at the Medical College at Bombay of being admitted to the military medical service.

I have, &c.

C. Merivale, Esq., C.B., (Signed) F. Paulet.
&c. &c.
India Office.

India Office, S.W., 19th January

VE laid before the Secretary of State for India in Council Lord F. Paulet's
4—161, dated the 10th instant, enclosing a representation from a native of
ng his exclusion as a married man from the competitive examination to
service of the British army; and, with reference to the concluding paragra
etter above quoted, I am directed to observe that expectations of being admit
edical service of the Indian armies are held out to native medical students in th
of the Acts of Parliament named in the margin, and that since the passing
of 1853 several natives have obtained commissions as assistant surgeons in
's Indian service.

I am further directed to express Sir Charles Wood's concurrence in the opi
Lord Herbert, that natives of India of native parentage are unsuited for gener
the British army, and to state that he could not recommend that they
ed to compete for assistant surgeoncies in that army.

The provision of suitable professional employment in India for native me
who have qualified themselves to compete for appointments on the faith o
Parliament above quoted will be the subject of separate and early consider

I have, &c.

The Under Secretary of State, (Signed) W.
War Office.

Circular Despatch to the Governments of India, Madras, and B

India Office, London, 16th

1. The Secretary of State for War has transmitted to me a
Mr. M. Beramjee, a native of Bombay, in reference to the applicat
the regulation which requires that candidates for admissio
Service shall not be married men.

2. Expectations of being admitted to the medical service of the Indian armi held out to native medical students in the clauses of the Acts of Parliament n the margin, and since the passing of those Acts several natives have obtained c sions as assistant surgeons in Her Majesty's Indian service. Examinations fo appointments have now ceased

3 & 4 Will. 4. c. 85, sec. 86, 16 & 17 Vict., c. 95, sec. 37.

3. Mr. Beramjee, who represents that he left India with the special object of qualifying himself to compete for admission into the Indian Medical Service, prays that the regulation above referred to may not be enforced in his case, and that he may be permitted to be examined for a medical appointment. The Secretary of State for War considers natives of India of native parentage unsuited for general service in the British army. In this opinion I have expressed my concurrence.

4. I am desirous that the principals of the several medical colleges in India should be informed of the decision now communicated to you.

5. The withdrawal of the privilege of competing for military medical appointments will no doubt cause disappointment to native medical students, who are qualifying themselves to compete for appointments on the faith of Acts of Parliament as above quoted.

I should wish the subject of the provision of other suitable professional employment in India for such students to engage your early consideration.

I have, &c.
(Signed) C. Wood.

Sir, India Office, 19th February 1861.

Page 41.

I am directed by the Secretary of State for India in Council to acknowledge the receipt of your letter, dated 18th instant, and to observe, with reference to the inquiry made therein, that my letter dated 19th January last informed you that Sir Charles Wood concurred in the opinion expressed by Lord Herbert that natives of India of native parentage are unsuited for general service in the British army.

Under the late Act of the Legislature, no fresh appointments will be made of assistant ons to Her Majesty's Indian forces. The withdrawal of the privilege of competing itary medical appointments will no doubt cause disappointment to native medical who were qualifying for such appointments; and Sir Charles Wood has impressed overnment of India the importance of endeavouring to provide suitable employ- India for such students.

enclosure to your letter is herewith returned.

I have, &c.
(Signed) W. E. Baker,
Colonel.

The Secretary for Military Correspondence,
War Office.

Sir, War Office, 2d March 1861.

Majesty's Government have come to the conclusion, as you are probably aware, ives of India, born of native parents, are not constitutionally fit for general service y medical profession; but among the candidates who have not been allowed to the recent examination for such appointments, as falling within the above ere are some few gentlemen whose rejection would seem to Lord Herbert derable doubt.

rred to his Lordship that the most satisfactory arrangement which will adopted, with a view to a solution of the difficulty, will be that a conference between yourself, Sir Ranald Martin, Examining Physician to the Secretary dia in Council, and the Director General of the Army Medical Department, of the latter, to which the gentlemen in question should be summoned should consider and report your joint opinion whether they are physicall tand the exposure to the various climates in which they would be require

e good enough to undertake this duty, Lord Herbert would request you with Dr. Gibson as to the day and hour when it would be convenient to

I have, &c.
(Signed) T. G. Baring.

Sir,

Sir, War Office, 2d March 1861.

HER Majesty's Government have come to the conclusion, as you are probably aware, that natives of India, born of native parents, are not constitutionally fit for general service in the army medical profession; but among the candidates who have not been allowed to compete at the recent examination for such appointments, as falling within the above definition, there are some few gentlemen whose rejection would seem to Lord Herbert open to considerable doubt.

It has occurred to his Lordship that the most satisfactory arrangement which will admit of being adopted with a view to a solution of the difficulty, will be, that a conference should be held between yourself, Sir John Liddell, and the Director General of the Army Medical Department, at the office of the latter, to which the gentlemen in question should be summoned; and that you should consider and report your joint opinion whether they are physically qualified to stand the exposure to the various climates in which they would be required to serve.

If you will be good enough to undertake this duty, Lord Herbert would request you to communicate with Dr. Gibson as to the day and hour when it would be convenient to you to attend.

I have, &c.
(Signed) T. G. BARING.

Sir Ranald Martin,
&c. &c.

Sir, Admiralty, W.C., 4th March 1861.

WITH reference to your letter of the 2d instant, relative to a joint report being made by myself, Sir Ranald Martin, and Director General of the Army Medical Department, as to whether certain candidates for the army ~~medical~~ profession, who are natives of India, and born ~~of native parents~~, are physically qualified to stand the exposure of the ~~various~~ climates in which they will be required to serve, I beg to acquaint you, ~~for~~ the information of Lord Herbert, that I have written to Dr. Gibson to appoint two o'clock on Wednesday next for meeting him at his office to examine the candidates in question.

I have, &c.
(Signed) J. LIDDELL,
Director General, &c.

T. G. Baring, Esq., M.P.,
Under Secretary of State for War.

Sir, War Office, 19th March 1861.

WITH reference to the correspondence which has passed respecting the admission of natives of India for general service in the army medical profession, I am directed to acquaint you, for the information of Sir Charles Wood, that among the candidates who have not been allowed to compete at the recent examination for such appointments there were some gentlemen whose rejection seemed to Lord Herbert open to considerable doubt.

Under these circumstances, Lord Herbert deemed it advisable that the gentlemen question should be summoned before a board, with a view to an inquiry as to whether they were constitutionally unfit to withstand the various climates in which they would be required to serve; and I am to enclose, for Sir Charles Wood's information, the report * which has been made by the officers composing the board.

I have, &c.
(Signed)

The Under Secretary of State for India.

No. 2.

CORRESPONDENCE relative to Dr. D. R. THOMPSON.

(18,858—190.)

50, Jewin Street,
16th Nov

Sir,

I BEG to solicit the favour of your attention to my req
be examined for an assistant surgeonship in the Indian a

fications are not within the rules recently laid down for the admission of candidates thereto.

I was born in India, and am 27 years of age; I was educated at the Madras Medical College, and obtained my certificate of qualification there in 1855; from that time until the beginning of this year I was employed at Rangoon. I came over to England in April last, and obtained by examination the degree of Doctor in Medicine at St. Andrew's University in Scotland, on the 27th of September last. I have been recently informed that candidates will not be allowed to present themselves for examination who are above 26 years of age, and who are not possessed of a double qualification. I am desirous of presenting myself for examination in February next, and should feel thankful if I might, under the circumstances, be allowed to be then examined, for otherwise my prospects of advancement in Her Majesty's service in India will be quite destroyed. In consequence of the mutinies in India I was unable to obtain leave of absence to come over here and present myself for examination, and ultimately I was obliged to purchase my resignation at a considerable sum of money. I can produce at your pleasure all my certificates in India, and also my diploma, obtained in Scotland.

I have, &c.
(Signed) D. R. Thompson.

The Director General, Medical Department.

(18,858—190.)

Army Medical Department,
7th December 1860.

Sir,

In forwarding the enclosed form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left-hand corner.

I have, &c.
(Signed) J. B. Gibson,
Director General.

Dr. R. Thompson, Esq.,
50, Jewin Street, Aldersgate Street, E.C.

P.S.—There will not in future be any appointments made for special service in India, but the Secretary of State for War will permit any gentleman under 28 years of age, who has been studying for the Indian medical service, to compete at the next examination for appointments in the Medical Department, provided he has the qualifications otherwise required.

(18,858—190 A.)

50, Jewin Street, Aldersgate,
10th December 1860, E.C.

Sir,

Beg to acknowledge the receipt of your favour of date 7th December 1860, (18,858—190), and to return the enclosed form, filled up as requested, and with [illegible] of the certificate of medical education, which I received from the Madras [illegible]ollege, for your kind consideration.

I have, &c.
(Signed) D. R. Thompson.

[illegible]ector General, Army
[illegible]al Department.

[illegible]tications and Examination of Candidates for Commissions in the Army Medical Service.

[illegible]idate presenting himself for admission to the competitive examination required for the [illegible]ice must be unmarried. He must produce a birth certificate from the district [illegible]te of baptism in which the date of birth is stated; or, if neither of these can be [illegible]m one of the parents, or from some other near relative who can attest the date [illegible] The certificate or affidavit must show that the candidate is not above 26 nor [illegible] must also produce certificates of moral conduct and character, one of them [illegible] possible.

2. The

2. The candidate must make a declaration that he labours under no mental or constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate. He must also attest his readiness to engage for general service immediately on being gazetted.

3. The candidate must possess a diploma in surgery, or a licence to practise it, from the Royal College of Surgeons of England, Scotland, or Ireland, or from the Faculty of Physicians and Surgeons of Glasgow, or from some other corporate body legally entitled to grant a diploma in surgery, or a licence to practise it. He must besides, and in addition to such diploma or licence, possess a degree in medicine, or other legal qualification to practise medicine in Great Britain or Ireland.

4. Degrees, diplomas, licences, and certificates of age and character must be lodged at the Army Medical Department for examination and registry, at least one week before the candidate appears for examination.

5. On producing the foregoing qualifications the candidate will be examined by the Examining Board, on the following subjects:—

Anatomy and physiology.

Surgery.

Medicine, including therapeutics, the diseases of women and children, chemistry, and pharmacy. (The examination in medicine and surgery will be, in part, practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of medical and surgical patients at the bedside.)

Comparative anatomy, zoology, and botany, with especial reference to Materia Medica.

The subjects for this part of the examination will be taken from the following books:—

(1.) "Animal Kingdom," by W. S. Dallas, F.L.S.

(2.) "Outlines of the Structure and Functions of the Animal Kingdom," by Rymer Jones; or "Cours Elémentaire d'Histoire Naturelle," par Milne Edwards.

(3.) Lindley's "School Botany," Lindley's "Medical and Economic Botany," Henfrey's "Elementary Course of Botany."

Candidates who may desire it may be examined in the elements of physics and in physical geography, The following books are recommended for this purpose:—

(1.) "Elements of Natural Philosophy," by Golding Bird and C. Brooks.

(2.) "Physical Geography," by Mrs. Somerville.

6. The names of candidates who pass the preliminary examination of the Examining Board will be sent to the Director General, and communicated to the Professors of the Army Medical School. The names will be arranged in the following classes:—

Class I.

Names of those who have passed a pre-eminently distinguished examination, arranged in their order of merit.	Characters which distinguish the excellence of each. Fitness for special service.

Class II.

Names of those who have passed a creditable examination, arranged in alphabetical order.	Statement of the topics in which each has individually excelled, or fallen short.

Class III.

Names of candidates who have passed the minimum examination, arranged in alphabetical order.	Statement of the particular branches of science in which each has been found to be deficient.

This information will enable the Professors of the Army Medical School to carry out their instructions with a definite aim as regards each class.

7. After passing his preliminary examination, every candidate will be required to attend one entire course of practical instruction at the Army Medical School, before being admitted to his examination for a commission, on,—

(1.) Hygiene.
(2.) Clinical and military medicine.
(3.) Clinical and military surgery.
(4.) Pathology of diseases and injuries incident to military service.

These courses to be of not less than four months' duration.

8. At their conclusion, the candidate will be required to pass an examination on the subjects taught in the school. The examination will be conducted by the professors of the school.

The Director General, or any medical officer deputed by him, may be present and take part in the examination. If the candidate give satisfactory evidence of being qualified for the practical duties of an army medical officer, he will be eligible for a commission as assistant surgeon.

9. During the period of his residence at the Army Medical School, each candidate will receive an allowance of 5*s.* per diem, with quarters; or 7*s.* per diem, without quarters, to cover all costs of maintenance; and he will be required to provide himself with uniform (viz., the regulation undress of an assistant surgeon, but without the sword).

10. All candidates will be required to conform to such rules of discipline as the Senate may from time to time, enact.

RULES for the EXAMINATION of ASSISTANT SURGEONS previous to PROMOTION.

THIS examination is intended as a test for promotion, and may be taken when an Assistant Surgeon has served five or more years.

When Assistant Surgeons have served the requisite time, they will be examined in the following manner:—

A series of printed questions, prepared by the Examining Board, will be sent by the Director General to the principal medical officers of stations where Assistant Surgeons are serving.

for examination. It will be the duty of the principal medical officer of the station to deliver these sealed questions to the Assistant Surgeons, and to see that they are answered without the assistance of books, notes, or communication with any other person. The answers are to be signed and delivered, sealed, to the principal medical officer, who is to send them, unopened, to the Director General, together with a certificate from the surgeon of the regiment, or other superior medical officer, that the Assistant Surgeon has availed himself of every opportunity of practising surgical operations on the dead body.*

The Assistant Surgeon will also be required to transmit, together with his answers to the Director General, a medico-topographical account of the station where he may happen to be at the time, or of some other station where he may have been resident sufficiently long to enable him to collect the necessary information for such a report. Failing this, he will send a medico-statistical report of his regiment for a period of at least 12 months.

If the Examining Board is satisfied with the replies to the questions, and the Director General is satisfied with the certificates and with the medico-topographical or statistical report, the Assistant Surgeon will be held qualified for promotion.

The Assistant Surgeon will thus be subjected to three separate examinations within the first 10 years of his service, each examination having a definite object. The first, to ascertain, previous to his admission into the service as a candidate, his scientific and professional education, and to test his acquirements in the various branches of professional knowledge. The second, after having passed through a course of special instruction in the Army Medical School, to test his knowledge of the special duties of an army medical officer; and the third, previous to his promotion, to ascertain that he has kept pace with the progress of medical science.

War Office, 24th March 1860.

SCHEDULE of QUALIFICATIONS.

I, Daniel Robert Thompson, 27 years of age in May last, a candidate for employment in the Medical Department of the Army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am unmarried, and that I labour under no mental nor constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have the degree of M.D. from the University of St. Andrew's, dated 28th September 1860.

(Signed) DANIEL ROBERT THOMPSON, M.D.

50, Jewin Street, Aldersgate Street, E.C.,
10th December 1860.

MADRAS MEDICAL COLLEGE.

I DO hereby certify, that Mr. D. R. Thompson received the following courses of instruction at this institution during the Sessions 1851–52, 1852–53, 1853–54, 1854–55:—

Session 1851–52.

Anatomy	Dr. G. Smith.
Chemistry	Mr. J. E. Mayer.
Botany	Mr. J. E. Mayer.
Anatomical demonstrations and dissections	Dr. G. Smith.

Session 1852–53.

Anatomy	Dr. G. Smith.
Physiology	Dr. G. Smith.
Materia medica	Dr. H. F. C. Cleghorn.
Theory and practice of surgery	Mr. A. Blacklock.
Theory and practice of medicine	Dr. J. Arther.
Dissections, Demonstrations }	Six months.

Session 1853–54.

Theory and practice of medicine	Dr. W. Evans.
Theory and practice of surgery	Mr. A. Blacklock.
Clinical medicine	Dr. W. Evans.
Clinical surgery	Mr. A. Blacklock.
Midwifery, and diseases of women and children	Mr. J. Shaw, F.R.C.S.
Diseases of the eye	Mr. J. Shaw, F.R.C.S.
Dissections, Demonstrations }	Six months.

Session 1854–55.

[illegible]ory and practice of medicine	Dr. W. Evans.
[illegible]l medicine	Dr. W. Evans.
[illegible] surgery	Mr. A. Blacklock.
[illegible]risprudence	Mr. J. Shaw, F.R.C.S.
[illegible]the eye	Mr. J. Shaw, F.R.C.S.
[illegible]d diseases of women and children	Mr. J. Shaw, F.R.C.S.
[illegible]ry	Mr. A. Blacklock.
[illegible]e	Mr. J. E. Mayer.

[illegible] may see this certificate before it is sent to the Director General.

Hospital Practices.

Surgical ward, from August to October 1853, and December 1854 to April 1855.
Medical ward, from November 1853 to June 1854.
Eye Infirmary and Lying-in Hospital, July 1854 to November 1854.
Dispensaries, Sessions 1851–52.

(Signed) J. SHAW, F.R.C.S.,
Principal Madras Medical College.

Madras Medical College,
23d July 1860.

Each session occupying nine months.

Army Medical Department,
14th December 1860.

Sir,

IN acknowledging the receipt of your letter of the 10th instant, enclosing a schedule of your professional education, I have the honour to acquaint you, that by the Royal Warrant of the 13th January 1860, regulating the admission of medical officers to the Indian military forces, it is laid down that a candidate must possess both a medical and surgical qualification before he can be admitted to the competitive examination for a commission; and it will be equally necessary for you to obtain a diploma or licence to practise surgery, in addition to your degree in medicine, before your name can be placed on the list of candidates for general service, for the examination which will take place in February 1861, the Secretary of State for War having sanctioned any gentleman under 28 years of age, who has been studying for the Indian medical service, to compete at the next examination for appointments in the medical department of the army, provided he has the qualifications otherwise required.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

Dr. D. R. Thompson,
50, Jewin Street, Aldersgate Street.

(18,858—190 B.)

59, Euston Square,
6th February 1861.

Sir,

IN accordance to your letter, No. 18,858—184 B., dated 14th December 1860, I have the honour to inform you, that I have obtained the diploma in surgery therein required, and beg you will be good enough to place my name on the list of candidates for general service for the next examination.

I have, &c.
(Signed) D. R. THOMPSON, M.D.

J. Gibson, Esq.,
Director General, Army Medical Department.

(18,858—190 B.)

Army Medical Department,
7th February 1861.

Sir,

IN acknowledging the receipt of your letter of the 6th instant, I have the honour to inform you, that the next competitive examination will take place at Chelsea Hospital, on Monday the 18th instant, at ten o'clock a.m.

You will therefore be pleased to attend at this office, on Tuesday the 12th instant, between the hours of 11 and 3 o'clock, bringing with you your degrees, diplomas, licences, certificates of age and moral character, and letter of recommendation for examination and registry.

I have, &c.
(Signed) J. B. GIBSON
Director

Dr. D. R. Thompson,
59, Euston Square, N.W.

(18,858—190 C.)

Daniel Robert Thompson, M.D. (St. Andrew's), aged 27.

I CERTIFY that this gentleman's degree, diploma, and certificates a[re] with the regulations (for the India Medical Service).

Certificate of age herewith.

(Signed)

Army Medical Department,
12th February 1861.

(18,858—190 C.)

DANIEL ROBERT, son of Robert Thompson, Bombardier Horse Artillery, and Catherine his wife, Indo-Briton, born May 14, 1833, was baptized July 8, 1833, by

(Signed) C. JEAFFRESON,
Chaplain.

The above is a true extract, taken from the register of baptisms kept at this chaplaincy, as examined by me.

(Signed) JOHN M'EVOY, M.A.,
Honourable Company's Chaplain,
District of Nagpore.

Kamptee, 15th May 1848.

I HAVE pleasure in certifying, as regards Mr. D. R. Thompson, late an assistant apothecary in Her Majesty's East Indian Service, who has purchased his discharge, that during his service under my supervision, very nearly three years, he has shown considerable professional ability, has always been attentive to his duties, and his conduct in every respect satisfactory.

(Signed) H. GRAHAM,
Madras Medical Establishment,
Superintendent Surgeon.

Rangoon, 31st January 1860.

Pegu Division.

London, 12th May 1860.

I HAVE much pleasure in certifying that I have known Mr. D. R. Thompson since the year 1853. He was then a student, and did duty under me in India for some time. I consider him to be a gentleman of good moral character, and superior medical attainments as a student. He evinced the greatest zeal and attention to his studies, and was always desirous of embracing every opportunity of furthering his knowledge in medicine and surgery.

(Signed) J. SHORTT, M.D., M.R.C.P.L., F.L.S.,
Assistant Surgeon Madras Army.

I HEREBY certify that the foregoing certificates are correct copies of the originals in the possession of this college.

(Signed) EDM. BELFOUR,
Secretary.

Royal College Surgeons of England,
4th February 1861.

Army Medical Department,
16th February 1861.

Sir,

ADVERTING to previous correspondence, I have now the honour to request you will call upon me at this office, on Monday morning next, the 18th instant, instead of attending at Chelsea Hospital.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

D. R. Thompson, Esq., M.D.,
59, Euston Square.

(18,858—190.)

Army Medical Department,
5th March 1861.

Sir,

THE Secretary of State for War having appointed a Board, consisting of Sir R. Martin, ... John Liddell, and myself, to furnish a report as to your fitness physically for ...loyment in the Army Medical Department, I have the honour to hope you will be ... make it convenient to attend at this office at 2 p.m., to-morrow.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

... R. Thompson,
..., Jewin Street, E.C.

...190 A.)

Army Medical Department,
6th March 1861.

...te for War having appointed a Board, consisting of Sir R. Martin, ...myself, to furnish a report as to your fitness physically for appointment

appointment to the Army Medical Department, I have the honour to hope you will be able to make it convenient to attend at this office on Friday next, the 8th instant, at 2 o'clock p.m.

I have, &c.
(Signed) J. B. Gibson,
Director General.

D. R. Thompson, Esq.,
59, Euston Square, N.W.

97, Marylebone Road,
9th April 1861.

Sir,

On the faith of the 87th section of the Act 3 & 4 William 4. c. 85, and the Queen's gracious Proclamation of August 1858, I left India on the 3d February, and arrived in England in April 1860. I held the office of apothecary in the Madras army, and it fell to me to be left in charge of the Native Detail Hospital, at Rangoon, for the years 1857, 1858, and 1859; but as the office did not hold out any prospect of bettering my condition, or of my rising to distinction, I saved what little I could from my pay to enable me to prosecute my medical studies in Great Britain.

I studied at St. Andrew's, and obtained from the University of St. Andrew's, in Scotland, the degree of M.D. in medicine, and subsequently having passed the new and severe examination of the Royal College of Surgeons in London, I obtained the diploma of surgery.

The usual official public notification in the press having informed me of an open competition on the 18th February, for the office of assistant-surgeon in Her Majesty's service, for all Her Majesty's subjects, duly qualified, I notified to Dr. Gibson, Director General of the Army Medical Department, my intention to compete for an assistant-surgeoncy; and having been duly examined by Dr. White, the official examiner, with respect to the soundness of my constitution and goodness of my general health, Dr. Gibson appointed me to attend the competitive examination on the 18th February, and I accordingly attended; but on the morning of the day was told by Dr. Gibson that as appointments were no longer to be made for the medical service of India, I could not be allowed to compete, because from my being born in India my health would break down in case I was sent to serve in rigid climates. My reply was, that my health was perfectly good, and that I was quite willing to serve in any part of the world; and that, after having come to England to win a commission in Her Majesty's service, exhausting my slender means in the attempt, it would be very hard upon me to have my hopes blighted; nevertheless, Dr. Gibson refused to permit me to compete. Since that date I have been called before a Medical Board, consisting of Drs. Gibson, Sir John Liddell, and Sir R. Martin, on the 8th March, to examine my state of health, and I have reason to believe the Board must have been satisfied with it; but since that period I have not had any communication from the War Office respecting the claim which I respectfully prefer to be allowed to compete for a commission in Her Majesty's medical service. Since being examined by the Medical Board, I have obtained the honour of being appointed a licentiate of midwifery by the Royal College of Surgeons.

As my original slender means are being rapidly exhausted, I trust the Secretary of State for War will give me an early opportunity of realizing the object of my ambition.

I have, &c.
(Signed) D. R. Thompson, M.D,

T. G. Baring, Esq., M.P.,
Under Secretary of State for War.

Sir,

War Office, 13th Apri

I have laid before the Secretary of State for War your letter of the [illegible] in which you remonstrate against the decision not to permit you to co[illegible] appointment in the army medical service.

In reply, I am to acquaint you that Lord Herbert regrets that the op[illegible] of Medical Officers, by whom you were examined, was to the effe[illegible] stitutionally unfit for employment in the various northern climat[illegible] army is called upon to serve.

I am to add, that a copy of the report of the Medical Board having been forwarded to the Secretary of State for India, Lord Herbert presumed that the result would have been communicated to you from the India Office.

I have, &c.
(Signed) E. LUGARD.

D. R. Thompson, Esq., M.D.
&c. &c. &c.

97, Marylebone Road,
17th April 1861.

Sir,

I HAVE received with surprise and mortification your letter of the 13th of April, stating that, in the opinion of a Board of Medical Officers, I was constitutionally unfit for employment in the various northern climates in which the British army is called upon to serve. I have now been more than one year in England, exposed to the severest winter almost known, and I have never been ill for a single day.

Under the most trying circumstances of a pestilential climate in Burmah I constantly preserved my health, and was never absent from hospital duties for a day; moreover, previously to my examination by the Medical Board, Dr. White, the Government examiner, had pronounced me physically eligible to compete. I respectfully beg, therefore, to ask in what way I am constitutionally unfitted to be employed in northern climates; and I must appeal against the decision of a medical opinion which I feel is not founded on fact, and I am quite willing to submit myself to examination by medical men attached to life assurance offices. I cannot believe that I am to be deprived of the rights of a British subject, guaranteed by Acts of Parliament, Her Majesty's gracious proclamation of August 1858, and the recent declaration of the Prime Minister in the House of Commons, because I was born in India, and with a bare shade of native blood inherited from one parent; but I have reason to fear that such is the fact, as I have seen a letter addressed by Dr. Gibson, Director General of the Army Medical Department, to Mr. W. Lyons, who was born in India, and now studying for a commission in the army medical service, stating that he will only be eligible to attend the next competitive examination for appointment in the Medical Department of the Army in case both his parents are Europeans.

I have, &c.
(Signed) D. R. THOMPSON, M.D.

Sir E. Lugard, K.C.B.,
Major General.

War Office, 27th April 1861.

Sir,

I HAVE laid before the Secretary of State for War your letter of the 17th instant, in which you urge a reconsideration of the decision by which you are debarred from entering the army medical service.

In reply, I am to acquaint you, that the officers composing the Medical Board by which you were examined were selected as being specially qualified from their knowledge and experience to advise the Secretary of State as to whether you and others similarly situated were constitutionally capable of serving for any length of time in northern climates; and Lord Herbert, much as he regrets the disappointment which the decision has occasioned you, feels bound to give effect to the opinion which he has received from those officers on the subject.

I am, &c.
(Signed) ED. LUGARD.

R. Thompson, Esq., M.D.

No. 3.

CORRESPONDENCE relative to Mr. D. PICACHY.

183.)

No. 54, Bernard Street, Russell Square,
12th November 1860.

o a notification in to-day's "Times," I beg the favour of you candidates for the Indian medical service are to conform to the same

same rules as those for the Home service, or if they will be allowed to present themselves under the old rules of the Indian service.

I remain, &c.
(Signed) D. PICACHY.

To the Secretary, Medical Department,
War Office.

Army Medical Department,
20th November 1860.

Sir,

IN reply to your note of the 12th instant, relative to the Indian medical examination, I have the honour to acquaint you that the subject is at present under the consideration of the Secretary of State for War, and as soon as I receive his decision you will be duly informed.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

D. Picachy, Esq.,
54, Bernard Street, Russell Square, W.C.

(18,858—183 A.)

No. 54, Bernard Street, Russell Square,
20th November 1860.

Sir,

IT being notified that no separate examination is to take place next January for the Indian Medical Service, and presuming, therefore, that all competitors will be required to conform to the rules now applicable for admission into Her Majesty's British Medical Staff, I beg respectfully to lay the following circumstances of my case before you.

I am a British-born subject, and graduated at the Medical College in Calcutta, but since then obtained my degree from the Royal College of Surgeons here. I held an uncovenanted appointment under the East India Company for upwards of six years, which I resigned after the late mutiny, for the express purpose of coming to England for this competitive examination, and being eligible for it, particularly in reference to qualifications and age, according to the regulations hitherto in operation.

I am now, however, 27 years old, and would deem it a great hardship indeed, after the heavy pecuniary expenses I have incurred, and the preparation I have been making for some time past, to be precluded from competing at the ensuing term, owing to changes in the regulations which I could not have anticipated.

Venturing, therefore, to solicit your kind and favourable consideration to this my representation, and begging to be allowed to enter upon the ensuing competition,

I beg, &c.
(Signed) D. PICACHY.

To Dr. J. B. Gibson, C.B.,
Director General, Army Medical Department.

(18,858—183.)

Army Medical Department,
7th December 1860.

Sir,

IN forwarding the enclosed Form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left-hand corner.

I have, &c.
(Signed) J. B. GIBSON,
Director G

D. Picachy, Esq.,
54, Bernard Street, Russell Square, W.C.

P.S.—There will not in future be any appointments made for special service, but the Secretary of State for War will permit any gentleman under 28 years of age who has been studying for the Indian medical service, to compete at the next examination for appointments in the Medical Department, provided he has the qualifications otherwise required.

(18,858—183 B.)

To Dr. J. R. GIBSON, Director General, Army Medical Department.

Sir,

IN reply to your letter, No, 18,858—183, of the 7th instant, I beg to return the schedule therewith sent, filled up as far as I am able at present.

I have, in addition, my certificates from the Medical College of Bengal, and am at present attending King's College.

I have, &c.
(Signed) D. PICACHY

QUALIFICATIONS and EXAMINATION of CANDIDATES for COMMISSIONS in the ARMY MEDICAL SERVICE.

For particulars, see case of Dr. Thompson, page 10.

(18,858—183 B.)

SCHEDULE OF QUALIFICATIONS.

Recommended by John A. Power, L.M., Cantab., M.R.C.P., Lond.

I, David Picachy, twenty-seven (27) years of age in March last, a candidate for employment in the Medical Department of the Army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am unmarried, and that I labour under no mental nor constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have a diploma in surgery from the Royal College of Surgeons of England, dated 26th October 1855.

(Signed) DAVID PICACHY.

54, Bernard Street, Russell Square, W.C.
10th December 1860.

Sir, Army Medical Department, 14th December 1860.

IN acknowledging the receipt of your letter of the 10th instant, enclosing a schedule of your professional education, I have the honour to acquaint you that by the Royal Warrant of the 13th January 1860, regulating the admission of medical officers to the Indian military forces, it is laid down that a candidate must possess both a medical and surgical qualification before he can be admitted to the competitive examination for a commission, and it will be equally necessary for you to obtain a degree in medicine, or license to practise it, in addition to your diploma in surgery, before your name can be placed on the list of candidates for general service, for the examination which will take place in February 1861; the Secretary of State for War having sanctioned any gentleman under 28 years of age, who has been studying for the Indian medical service, to compete at the next examination for appointments in the Medical Department of the Army, provided he has the qualifications otherwise required.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

D. Picachy, Esq.,
54, Bernard Street, Russell Square.

To the SECRETARY OF STATE FOR WAR, Pall Mall.

Sir,

consequence of a very recent order, by which persons of a mixed European and parentage, like myself, are precluded from entering the army medical service, o lay the following circumstances of my case before you, in the hope that n of compensation which has been granted to some may likewise be extended

orn in Calcutta, where my father and myself both held service under the late a Company, and he is now a Government pensioner. I was a sub-assistant Bengal Presidency for upwards of six years, and I resigned my appoint- the special purpose of presenting myself as a candidate for the Indian I arrived in England in March 1860, since which time two changes d, which I could have not anticipated, viz., the amalgamation of the dical services, and more especially the rule above alluded to.

In

In accordance, however, with the regulations heretofore in operation, I have incurred the heavy expense of passage money, and obtained such certificates of qualification as were deemed requisite, and which are now completely lost to me. A memorandum of these I enclose, as also extracts from correspondence relating thereto with the Director General of the Army Medical Department.

I regret my means will not admit of my prolonging my stay here to ascertain the result of this my solicitation, which I leave to your favourable consideration. I sail to-morrow for Calcutta, but Mr. J. C. Tompkins, of 18, York Place, Baker Street, Portman Square, will act on my behalf, and furnish any other information that may be needed.

I remain, &c.

(Signed) D. PICACHY,
Member of the Royal College of Surgeons of England,
and Graduate Bengal Medical College.

54, Bernard Street, Russell Square,
London, 3d May 1861.

P.S.—Statement of monies actually expended by me :—

	£	s.	d.	£	s.	d.
For passage per Peninsular and Oriental Company's steamer from Calcutta	102	0	0			
Ditto, Ditto	117	0	0			
For certificates referred to by accompanying documents	29	8	0			
				248	8	0
For value of appointment as sub-assistant surgeon of second grade resigned as above mentioned	200	0	0			
For private practice abandoned from February 1860 to June 1861	200	0	0			
				400	0	0
				£ 648	8	0

(Signed) D. PICACHY, M.R.C.S.L.

MEMORANDUM of CERTIFICATES obtained in conformity to the old Regulations for Admission into the Indian Medical Service.

Certificates from King's College for medical, surgical, and midwifery practice.
Certificate of operative surgery from Bartholomew's Hospital.
Certificate of attendance at the Charing Cross Ophthalmic Hospital.
Certificate of attendance at the Insane Asylum at the Bethlem Hospital.

Sir, War Office, 14th May 1861.

I AM directed by the Secretary of State for War to transmit to you, for the consideration of Sir C. Wood, the enclosed copy of a letter from Mr. Picachy, in which he applies for redress for not having been allowed to compete for an appointment in the Army Medical Department.

I am, &c.
(Signed) ED. LUGARD.

The Under Secretary of State for India.

Sir, War Office, 14th May

I AM directed by the Secretary of State for War to acknowledge the receipt of your letter of the 3d instant, in which you represent the hardship which has been inflicted upon you, in consequence of your not having been allowed to compete for an appointment in the Army Medical Department; and to acquaint you, in reply, that Mr. Secretary has caused your letter to be referred for the consideration of the Secretary of State for India.

I am at the same time to remind you that you were informed in December last, by the Director General of the Army Medical Department, that you were ineligible to compete for such appointment, on the ground of your not being possessed of a licence to practise medicine, and that you have not since reported yourself to have acquired this qualification.

I am, &c.
(Signed) Ed. Lugard.

D. Picachy, Esq., M.R.C.S.

Sir, India Office, 3d June 1861.

I am directed by the Secretary of State for India in Council to acknowledge the receipt of your letter dated the 14th ultimo, forwarding copy of an application from Mr. Picachy for compensation for not having been allowed to compete for an appointment in the Army Medical Department. As it appears that this gentleman failed to pass at the examination held in July last for the Indian medical service, Sir Charles Wood is of opinion that he is not entitled to compensation from this office.

I have, &c.
(Signed) W. E. Baker, Colonel.

The Secretary for Military Correspondence,
&c. &c. &c.,
War Office.

No. 4.

No. 4.

Correspondence relative to Dr. S. P. Andy.

(18,858—184.)

To the Secretary, Medical Department, War Office.

5, Noel Street, Islington, N.,
12th November 1860.

Sir,

Being given to understand that the examination for the Indian medical service will be conducted along with the Home army medical service, I shall feel obliged if you will kindly inform me whether the examination will be conducted under the usual rules of the Indian army, or that of the present rules of the British army.

I remain, &c.
(Signed) S. Pulney Andy, M.D.

Army Medical Department,
20th November 1860.

Sir,

In reply to your note of the 12th instant, relative to the Indian medical examination, I have the honour to acquaint you that the subject is at present under the consideration of the Secretary of State for War, and as soon as I receive his decision you will be duly informed.

I have, &c.
(Signed) J. B. Gibson,
Director General.

Dr. S. Pulney Andy,
5, Noel Street, Islington, N.

(18,858–184 A.)

5, Noel Street, Islington,
20th November 1860.

Sir,

I am a native of India, and received my medical education at Madras Medical College. [illegible]e faith of existing regulations as to age and qualifications for admission into Her [illegible]'s service in India, I came to England for the express purpose of competing for [illegible]ommission in Her Majesty's Indian forces.

[illegible]ualified myself according to the hitherto existing regulations, and have for [illegible] been anxiously preparing for the competition which I understood was [illegible]lace next February.

[illegible]tions, promulgated within the last few days, without previous notice, [illegible]alifications as to age, &c. in the hitherto distinct services, have [illegible] I am above the prescribed age of 26), and, without any fault or neglect

neglect on my part, have utterly blighted my prospects and reasonable expectation of attaining a position, which has long been the object of my ambition, and for which I have made such great pecuniary and other sacrifices.

Seeing, therefore, that I could not possibly have foreseen or guarded against this unexpected change of arrangements, and that I had taken this step, of such serious importance to me, on the faith of publicly recognized regulations, I venture to beg for your kind and favourable consideration of my case, and that I may still be allowed to enter upon the ensuing competition.

I remain, &c.
(Signed) S. Pulney Andy, M.D.

To the Director General of the
Army Medical Department.

(18,858—184.)

Army Medical Department,
7th December 1860.

Sir,

In forwarding the enclosed form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left-hand corner.

I have, &c.
(Signed) J. B. Gibson,
Director General.

S. P. Andy, Esq.,
5, Noel Street Islington, N.

P.S.—There will not in future be any appointments made for special service in India, but the Secretary of State for War will permit any gentleman under 28 years of age, who has been studying for the Indian medical service, to compete at the next examination for appointments in the Medical Department, provided he has the qualifications otherwise required.

(18,858—184 B.)

5, Noel Street, Islington, N.
10th December 1860.

Sir,

With reference to your letter, No. 18,858—184 A., dated 7th instant, I have the honour to return the enclosed form, filled as requested; and that with regard to the rules it contains requiring a distinct diploma both in surgery and medicine, I beg to bring to your favourable consideration that I have hitherto qualified myself on the faith of the then existing regulations for the Indian service, in the 3d para. of which it states, "A diploma in surgery, or a decree in medicine, provided an examination in surgery be required for such a degree, from somebody competent by law to grant or confer such diploma or degree;" and as the fulfilment of the present requirements so suddenly demanded does not, I am sorry to say, give me time enough to obtain a distinct diploma in surgery, and as the examination for the degree which I now hold as "Doctor of Medicine" from the University of St. Andrew's comprised both the subjects of surgery as well as medicine, I therefore pray that you will kindly permit the diploma to be sufficient for both purposes.

I have &c.
(Signed) S. Pulney Andy, M.D.

J. B. Gibson, Esq., M.D., C.B.,
Director General, Army Medical Department.

Qualifications and Examination of Candidates for Commissions in the Army Medical Service.

For particulars, *see* case of Dr. Thompson, page 10.

Schedule of Qualifications.

I, Senjee Pulney Andy, 27 years of age in May last, a candidate for emplo
Department of the Army, do hereby attest my readiness to engage for general
or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am unmarried, and that I labour under no mental nor constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have the degree of M.D. from the University of St. Andrew's, 28th September 1860.

(Signed) SENJEE PULNEY ANDY, M.D.

5, Noel Street, Islington, N.,
10th December 1860.

Army Medical Department,
14th December 1860.

Sir,

IN acknowledging the receipt of your letter of the 10th instant, enclosing a schedule of your professional education, I have the honour to acquaint you that by the Royal Warrant of the 13th January 1860, regulating the admission of medical officers to the Indian military forces, it is laid down that a candidate must possess both a medical and surgical qualification before he can be admitted to the competitive examination for a commission, and it will be equally necessary for you to obtain a diploma or licence to practise surgery, in addition to your degree in medicine, before your name can be placed on the list of candidates for general service, for the examination which will take place in February 1861, the Secretary of State for War having sanctioned any gentleman under 28 years of age, who has been studying for the Indian medical service, to compete at the next examination for appointments in the Medical Department of the Army, provided he has the qualifications otherwise required.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

Dr. S. P. Andy,
5, Noel Street, Islington, N.

(18,858—184 C.)

5 Noel, Street, Islington, N.
1st February 1861.

Sir,

IN compliance to the requests contained in your letter, No. 18,858—184 B., dated 14th December 1860, I beg to state, for your information, that I have obtained the diploma of member of the Royal College of Surgeons of England, and trust that you will be pleased to place my name on the list of candidates for the next competitive examination.

I have, &c.
(Signed) S. PULNEY ANDY, M.D.

To the Director General
of the Army Medical Department.

(18,858—184 C.)

Army Medical Department,
6th February 1861.

Sir,

In acknowledging the receipt of your letter of the 1st instant, I have now the honour to inform you that the next competitive examination will take place at Chelsea Hospital, on Monday the 18th instant, at 10 o'clock, A.M.

You will therefore be pleased to attend at this office on Tuesday the 12th instant, between the hours of 11 and 3 o'clock, bringing with you your degrees, diplomas, licences, certificates of age, and moral character, and letter of recommendation for examination and registry.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

Dr. S. P. Andy,
5, Noel Street, Islington, N.

(18,858—184 D.)

SENJEE PULNEY ANDY, M.D., St. Andrew's.

I certify that I have examined this gentleman's diploma, degree, and certificates, and find the [illegible]ity with the regulations.

[illegible]re herewith, scarcely formal, but the best he can obtain.

T. G. FITZGERALD,
Staff Surgeon.

[illegible]artment,
[illegible]61.

(18,858—184 D.)

THIS is to certify that I have known S. Pulney Andy from his infancy. He is of respectable parentage, and to the best of my recollection that he was born about the commencement of May, in the year of 1833 (eighteen hundred and thirty-three), at Trichinopoly, in the suburbs of Madras Presidency.

(Signed) MOOTOOVEEROO,
Madras, 16th January 1860. Subr-Major, 25th Regiment, N.I.

Army Medical Department,
Sir, 16th February 1861.

ADVERTING to previous correspondence, I have now the honour to request you will call upon me at this office on Monday morning next the 18th instant, instead of attending at Chelsea Hospital.

I have, &c.
(Signed) J. B. GIBSON,
S. P. Andy, Esq., M.D., Director General.
5, Noel Street, Islington.

5, Noel Street, Islington, N.,
Sir, 19th February 1861.

WITH reference to the verbal intimation received from you yesterday, stating that natives of India were not eligible for employment in the military service, I have the honour to request that you will kindly favour me with a copy of any rules issued by order of the Government, or any Act of Parliament, to that effect. The objection now stated should have been made at once when I applied last year for admission to the examination, which application, on the contrary, met the sanction of the Secretary of State for War; and you directed me to obtain a diploma in surgery, in addition to my degree in medicine, in order to render myself thoroughly eligible according to the recent rules of the service, for the accomplishment of which I have undergone considerable heavy expense, both in money and time.

2. If the Bengal mutiny has been a cause to exclude Indians from the military service, I beg to state that I am the first native from the loyal Presidency of Madras, and a man of the highest order of caste, who has offered himself for a medical commission. I came to England on the faith of the advertised promises of Her Majesty's Government, thereby infringing the most revered laws of my country, rendering myself subject to excommunication from my relatives and friends, besides from native society. I am sorry to be obliged to add, that if this news of my disappointment should reach India, it will create a great deal of grievance and mistrust in the faith of the British Government. Such combined grievances, chiefly relating to caste, as your Government are aware, had been the cause of the late mutiny.

3. The pecuniary remuneration which you stated that the Secretary of State for India is desirous of granting to me will not in any way enable me to redeem my caste; and as you were the communicant on this subject from the Secretary of State, I deem that it is but right that you should be pleased to lay this my grievance before him, and procure me at least a free passage to Madras, and an appointment as a covenanted civil surgeon, either giving me charge of one of the civil dispensaries in the Presidency division or the zillahs (collectorates) upon the same footing as those of the zillah surgeons from the military medical service, with regard to pay, privileges, and status in society. There are other offices, the duties of which I am competent to fulfil; such as of an assay-master, if such appointment is vacant at the Mint; and I trust that if, from State reason I am deemed ineligible for the appointment for which, on the faith of the publis offers of Government, I have laboured and studied both in India and in England, be indemnified by some such appointment, so far as the mere pecuniary loss satisfied.

4. I shall, however, in such case, deeply regret that I have not the o serving Her Majesty in my proper medical capacity, to insure which, I h difficulty, made my way to Great Britain, have passed nearly a year in this country, and have obtained the degree of Doctor in Medicine the Royal College of Surgeons.

5. I trust, in conclusion, that you will kindly submit this to Sir Charles Wood, with your kind support, and obtain an early reply, as my detention in England will only entail on me unnecessary expense and loss of time.

I have, &c.
(Signed) SENJEE PULNEY ANDY,
M.D., M.R.C.S.L.

Dr. J. B. Gibson, C.B., Director General,
Army Medical Department.

To the Right Honourable Sir CHARLES WOOD, Secretary of State for India.

5, Noel Street, Islington, N.,
25th February 1861.

Sir,

WITH reference to the request contained in the note of your private secretary, dated 23d instant, I beg to state that my letter of the 19th, submitted through the Director General of the Army Medical Department, contains a full statement of my case. However, I now submit a brief account of my wishes to your favourable consideration.

In the hope of obtaining a commission in the military medical service, which was the highest boon that natives of India could aspire to in Her Majesty's service, and for which ambition, in the faith of the publicly advertised promises of Her Majesty, I have laboured and studied, both in India and in this country, I made my way to Great Britain with great difficulty, infringing the most revered laws of my country. Although a man of the highest caste, I have submitted to abandon this position, and have rendered myself subject to excommunication from my friends and relations. I have passed nearly a year in arduous study in Britain, and obtained the degree of Doctor in Medicine, and Member of the Royal College of Surgeons, for the accomplishment of which I have undergone considerable heavy pecuniary and other sacrifices.

Dr. Gibson has informed me that you are desirous of granting me some pecuniary remuneration and an employment in the Civil Service; I beg, therefore, that you will be pleased to provide me with a free passage to Madras, and an appointment as a covenanted civil surgeon, either giving me the charge of one of the civil dispensaries in the Presidency division, or the zillahs (collectorates), on the same footing as those of the zillah surgeons from the military medical service, with regard to pay, privileges, and status in society. I beg also to bring to your notice that there is an appointment of the kind I allude to granted by the Madras Government to an apothecary (Dr. J. Howard) who came home and graduated, and who, though yet retained in the subordinate medical service, holds an appointment as civil surgeon of Ganjam.

My sincere wish is, that my appointment should be granted by the Home Government, and instructions sent to the local Government to have my name enrolled on the list of covenanted civil medical servants, instead of having me employed as an uncovenanted sub-assistant surgeon, which is an inferior appointment, and not in any way equal to compensate my labour, pecuniary loss, and my high professional position.

I trust in conclusion that you will kindly take my case into your liberal and generous consideration, and be pleased to grant my request, and despatch me by the next mail, if possible, as my detention in England only entails on me heavy additional expense which I can ill afford.

I have, &c.
(Signed) SENJEE PULNEY ANDY,
M.D., M.R.C.S.L.

Army Medical Department,
27th February 1861.

Sir,

I HAVE the honour to forward, for the consideration and decision of the Secretary of State for War, the accompanying communication* from Dr. Senjee Pulney Andy, relative to his having been refused admission to the competitive examination of candidates for the Medical Department of the Army.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

...tary for Military Correspondence,
&c. &c.
War Office.

Sir,

Sir, War Office, 5th March 1861.

I AM directed by Lord Herbert to transmit to you the enclosed copy of a letter addressed to the Director General of the Army Medical Department, by Dr. Senjee Pulney Andy, claiming redress for the disappointment to which he has been subjected by not having been allowed admission to the competitive examination of candidates for the Medical Department of the Army.

In laying this letter before the Secretary of State for India in Council, I am to request that you will observe to him that the statements contained in it appear to Lord Herbert to be deserving of serious consideration.

I have, &c.
(Signed) E. LUGARD.

H. Merivale, Esq.,
&c. &c.
India Office.

Sir, War Office, 5th March 1861.

YOUR letter, dated the 19th ultimo, addressed to the Director General of the Army Medical Department, having been referred to Lord Herbert, I am to state to you in reply that it is with sincere regret his Lordship has learnt the disappointment which you have experienced at the discontinuance of a separate medical service for India. He has transmitted a copy of your letter to the Secretary of State for India in Council, for his consideration.

I have, &c.
(Signed) E. LUGARD.

Dr. Senjee Pulney Andy,
&c. &c. &c.

Army Medical Department,
5th March 1861.

THE Director General presents his compliments to Mr. Andy, and with reference to previous correspondence, trusts he will be able to make it convenient to call at this office to-morrow at two o'clock P.M.

Dr. S. P. Andy,
5, Noel Street, Islington, N.

(18,858—184 D.)

Army Medical Department,
Sir, 6th March 1861.

India Office, 19/2/61.
Colonel Baker to Secretary for Military Correspondence, War Office.

WITH reference to previous correspondence, I have the honour to inform you that in consequence of the varied climates medical officers of Her Majesty's army have to encounter, it has been thought advisable (as will be seen on reference to the enclosed copy of a letter from the India Office) not to subject natives of India to the chances of service out of that country, and it has consequently been decided that native gentlemen should not be permitted to compete for appointments in the general military service. Should you wish to be employed in India, I would suggest that you apply direct to the Secretary of State for India.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

Dr. S. P. Andy,
5, Noel Street, Islington, N.

Sir, India Office, S.W., 19th March 1

I AM directed by the Secretary of State for India in Council to acknow receipt of your letter of the 5th instant, and to acquaint you, in reply, that Dr. has addressed to Sir Charles Wood a direct communication on the subject to compensation for the disappointment of his expectations to be allow for admission to the Medical Department of the Indian Army, towhi gentlemen have hitherto been eligible. I am directed further t

rejection of these gentlemen as candidates for the Army Medical Department rests entirely with the Secretary of State for War.

I have, &c.
(Signed) W. E. BAKER,
Colonel.

The Secretary of Military Correspondence,
War Office.

Sir, India Office, 21st March 1861.

I AM directed by the Secretary of State for India in Council to acknowledge the receipt of your letter, dated 25th February, stating the expectations of professional employment with which you came to England, and requesting that a covenanted civil appointment in the medical service in India may be guaranteed to you, and that you may be compensated for the expense which you have incurred for the attainment of professional knowledge in this country.

Sir C. Wood regrets that the changes lately determined upon in the organization of the Indian armies have prevented the fulfilment of your just expectations to be allowed to compete for a commission in the Indian Medical Department.

He has instructed the Government of India to take into early consideration the subject of the provision of suitable professional employment for native medical gentlemen; and in consideration of the expenses which you have incurred in coming to this country, and in qualifying yourself for the competitive examination, he is prepared to grant you a sum of 100*l.*, on the production of a certificate from Sir J. R. Martin, Examining Physician, that you would have been qualified to compete at the examination for the Indian medical service under the old regulations, and to grant you 100*l.* in addition as soon as you have taken your passage to return to India.

I have, &c.
(Signed) W. E. BAKER,
Colonel.

Dr. S. P. Andy.

CERTIFIED that I have this day examined the various testimonials and diplomas presented by Mr. P. Andy. They prove that Mr. Andy would have been qualified to compete at the examination for the Indian medical service under the old regulations.

(Signed) J. R. MARTIN.

Grosvenor Street, 22d March 1861.

100*l.* passed to Mr. Andy 26th March 1861.
100*l.* passage „ 28th March 1861.

No. 5.

No. 5.

CORRESPONDENCE relative to Mr. BERAMJEE.

To Dr. GIBSON, C.B., Director General, Medical Department, Horse Guards.

University College, Gower Street, W.C.,
Sir, 30th November 1860.

I WOULD beg respectfully to submit the following circumstances for consideration.

I am a native of Bombay, and by birth a Parsee. I have completed a five years' course of study in medicine, and possess the diploma of the Grant Medical College of Bombay.

In May of last year I left India, with the special object of qualifying myself to compete for admission into Her Majesty's Indian medical service, and had hoped to have presented myself for examination in June of next year, but according to the regulations, lately issued, I find that candidates must be unmarried.

[illegible]e the great majority of, not only my own class, but of the inhabitants of India [illegible]lly, I have, although only now 24 years of age, been married for several years; [illegible]y mention that of the 50 students or thereabouts now attending the medical [illegible] Bombay, certainly not more than five are unmarried.

[illegible]herefore very respectfully venture to represent that, not only would the [illegible] the above-named regulation have the effect of practically nullifying Her [illegible]s decision, that the natives of India should be allowed to present [illegible]mination along with the rest of her subjects, but that it would fall [illegible]ty upon myself, as on the faith of the regulations until now in force I have

I have undergone the expense of coming to this country solely with the before-named object.

May I therefore venture to hope that the regulation in question may not be enforced in my case; and on behalf of those of my countrymen who may in future, like myself, be desirous of obtaining the high honour of an appointment in Her Majesty's Indian service, I would likewise very humbly presume to solicit that the same exemption may be applied to them.

I have, &c.
(Signed) MUNCHERJEE-BERAMJEE,
Graduate of the Grant Medical College of Bombay.

Army Medical Department,
Sir, 5th December 1860.

IN acknowledging the receipt of your letter of the 1st instant, conveying the sanction of the Secretary of State for War to candidates for medical appointments in the army, who have been studying with a view to enter the Indian medical service, being admitted to the next competitive examination up to 28 years of age, I have now the honour to submit, for the consideration of Mr. Secretary Herbert, the enclosed application from one of the gentlemen in question, begging, on account of the reasons therein set forth, that his marriage may not be considered as rendering him ineligible.

I have, &c.
(Signed) J. R. GIBSON,
Director General.

The Secretary for Military Correspondence,
&c. &c. &c.
War Office, Pall Mall.

EXTRACT from Minute of Secretary of State for War, dated 13th December 1860.

UNDER the circumstances, which are exceptional, this may be allowed, but, as a rule, our conditions must be observed.

To Dr. GIBSON, C.B., Director General, Army Medical Department.

University College, Gower Street,
Sir, 22d February 1861.

I BEG most respectfully to inform you that I have a diploma in medicine from the Grant Medical College of Bombay. This was obtained by me in April 1860, after undergoing a prolonged examination, conducted by a special Government examiner, three assessors, and by the professors of the college. I beg to mention also that the Grant Medical College is one of the foreign medical schools recognized by the University of London.

The diploma in question is forwarded with this letter for your inspection, and I await your decision whether it will be recognized as a degree in medicine at the competitive examination for assistant surgeons in August next.

I have, &c.
(Signed) MUNCHERJEE BERAMJEE COLAH.

Army Medical Department,
Sir, 4th March 1861.

IN acknowledging the receipt of your letter of the 22d ultimo, with its enclos[ure] (herewith returned), I have the honour to inform you that the diploma of the G[rant] Medical College is not admitted as the medical qualification required to be posse[ssed] candidates for the Army Medical Department.

I beg also to acquaint you, that in consequence of the varied climates medi[cal officers] of Her Majesty's army have to encounter, it has been thought advisable (as [appears] on reference to the enclosed copy of a letter from the India Office) not to [expose] of India to the chances of service out of that country; and it has in c[onsequence been] decided that native gentlemen should not be permitted to compete f[or appointments in] the general military service.

Should you wish to be employed in India, I would suggest that you apply to the Secretary of State for India.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

M. Beramjee, Esq.,
University College, Gower Street, W.C.

Army Medical Department, 5th March 1861.

THE Director General presents his compliments to Mr. Beramjee, and, with reference to previous correspondence, trusts he will be able to make it convenient to call at this office to-morrow, at two o'clock, P.M.

M. Beramjee, Esq.
University College, Gower Street.

To the Right Honourable Lord HERBERT, Secretary of State for War, &c. &c. &c.

University College, Gower Street, W.C.,
April 1861.

My Lord,

I BEG most respectfully to submit the following statement for your Lordship's consideration.

I am a Parsee by birth, a native of Bombay, and a member of the Royal College of Surgeons of England. I came to London in June of last year with the especial object of competing for an appointment in Her Majesty's Indian medical service. Though I had completed a five years' course of medical studies in Bombay, I resolved to spend 12 months in study in this country to further my medical knowledge, and to qualify myself the better for an appointment in the army. About the beginning of November last it was announced that in consequence of the amalgamation of the Indian and British forces there would in future be only one examination for both the services, and that out of the successful candidates a certain number would be appointed to Her Majesty's Indian forces. It was also announced that the candidates would be admitted for examination under the same regulations which were applicable to home service. As one of these regulations required that all candidates should be unmarried, and as I was married, it formed an objection to my being admitted for examination. I consequently represented my case by a written application, dated 29th November 1860, to the Director General of the Army Medical Department, who submitted the same to your Lordship, and I was thereafter informed that your Lordship had decided it in my favour. To my utter disappointment, however, I learned from the Director General of the 5th ultimo, that as natives of India, of native parentage, are deemed by your Lordship unfit for entering into Her Majesty's general medical service on account of their supposed physical incapability to perform the active duties of medical officers in cold climates, such as Canada, I will not be allowed to offer myself for examination.

I would, however, humbly venture to hope that the consideration of the following facts will induce your Lordship to rescind the above decision in my case :—

1st. Natives of India are of various denominations, manners, and customs. They differ widely in their mode of life. Their constitutions are different, and in some races the power of resisting the vicissitudes of climate is very great. I believe, however, that I am correct in stating, that of all the natives of India none are more English in constitution, and in mode of life generally, than my own countrymen, the Parsees.

2nd. The Parsees of the present day live in all parts of the world; a few are in Australia, a large number in China, many now in England, and within the last year two of them have established themselves in New York. For the last 50 years or more the Parsees have borne the severe cold winters of Canton and Shanghai, without the least inconvenience to their health or risk to their life. Within the last six years they have established themselves in London, and later still, in Liverpool and Manchester, and are [illegible] day here in sufficient numbers (about 45, including children of all ages,) to enable [illegible]ference to be drawn. It is an unquestionable fact that they have borne several [illegible]nd the last, a most severe one, with perfect impunity. I am, moreover, able to [illegible]y follow their different occupations with an increased amount of mental and [illegible] and yet enjoy better health and strength than they did in India. In my [illegible] to state that during the past severe winter I have, with ordinary warm [illegible]lled out at all hours, during the night as well as day, to attend to [illegible]out experiencing any bad effects whatever. On the contrary, though working

working mentally for a longer time during the 24 hours than I used to do in India, I have actually improved in health since I arrived in this country.

I trust your Lordship will excuse the length of this communication, and most anxiously awaiting your decision,

I beg to subscribe myself, &c.

MUNCHERJEE BERAMJEE COLAH.

Army Medical Department,
13th April 1861.

Sir,

ADVERTING to your application for an appointment in the Medical Department of the Army, I have the honour to request you will be pleased to inform me whether you are willing to compete at the next competitive examination (should you be otherwise qualified) when it takes place, for an appointment on the staff, for service on the West coast of Africa.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

M. Beramjee, Esq.
&c. &c. &c.
University College, Gower Street.

War Office, 18th April 1861.

Sir,

I AM directed by the Secretary of State for War to acknowledge the receipt of your letter of the — instant, in which you request a reconsideration of the decision under which you are prohibited from competing for an appointment in the army medical service.

In reply, I am to acquaint you that Lord Herbert has taken the opinion of those best competent, from their knowledge and experience, to advise him on the subject, and the result being to confirm his own previous impression as to the constitutional unfitness of the native and mixed races of India and other tropical countries to sustain for any length of time the climate of our northern regions, his Lordship is under the necessity of adhering to the decision arrived at.

I have, &c.
(Signed) EDWARD LUGARD.

M. B. Colah, Esq.
&c. &c. &c.

To Dr. GIBSON, C.B., Director General, Army Medical Department.

University College, Gower-street, W.C.,
19th April 1861.

Sir,

I HAVE the honour to acknowledge the receipt of your letter dated the 13th instant, desiring to know whether I would be willing to compete for an appointment on the staff for service on the West coast of Africa.

In reply, I beg respectfully to remind you that I studied in Bombay, and came over to this country for the especial object of competing for an appointment in Her Majesty's Indian forces. As the Indian and British forces have been since united into one Royal general service, it is but just that, as a natural-born subject of Her Majesty, I be admitted, like other candidates, to the competitive examination for the general service, without any special conditions.

I am prepared, if successful, to serve in any part of the world to which in the course of duty I may be sent; but I feel that my submission to the special terms now propose would be not only prejudicial to myself, but imply my acquiescence in what I cann but regard as an injustice to my countrymen.

I respectfully request that you will be pleased to favour me with an early reply medical studies in England are now drawing to a close.

I have, &c.
(Signed) MUNCHERJEE BERAM

Army Medical Department,
27th April 1861.

Sir,

In reply to your letter of the 19th instant, I have the honour to inform you that as it appears by a communication from the India Office that the Secretary of State for India is of opinion that natives of that country born of native parents are unsuited for general service in the British army, I am unable to sanction your being admitted to the competitive examination for appointment in the Medical Department of the Army.

I have, &c.
(Signed) J. B. Gibson,
Director General.

M. Beramjee, Esq.
University College, Gower Street, W.C.

No. 6.

No. 6.

Correspondence relative to Mr. J. G. G. Grant.

Sir,

8, Walcot Place West, Kennington Road.

Having failed in obtaining definite information, I am compelled to trouble you. To be brief, I was sent from India by my father with the express view of studying for Her Majesty's Indian forces; and though European, I was sufficiently long in that country to speak the language well. Having obtained the Edinburgh M.D., I laboured to fulfil every condition imposed by the late Indian regulations, which gave me to understand that "all natural-born subjects of Her Majesty, between 21 and 28 years of age," and of sound health, would be eligible, provided that they could produce, in addition to a degree in medicine, including a surgical examination (which the Edinburgh M.D. does), certificates of extra attendance on classes and hospitals therein specified. All these conditions have I fulfilled to the letter, necessitating, need I add, extra outlay; and now, at the "eleventh hour," after much anxiety, you may conceive my serious surprise and disappointment on receiving from the India Office an intimation to the effect that "all candidates" at the next examination will be subject to the regulations issued by the "War Office!" not only rendering past labour in conforming to the late regulations of no avail, but imposing a restriction as to age in itself sufficient to exclude me, for I am past 26 and nearer 27; thus compelling me to return to India after expenditure of time and means, without obtaining the sole object of my studies in Britain. Surely I am mistaken in supposing the new regulations to apply retrospectively, and without consideration for one, who, though qualified according to regulations but lately supplied him, and, so to speak, ready for the next examination, would thus be excluded from the only opportunity of competing, and by circumstances over which he could have no control?

It would only be with the certainty of being admitted to the next examination under the late regulations that I could now afford to delay here longer.

Apologising for the trouble I cause you, and with confidence in your kindly aid,

I am, &c.
(Signed) James G. G. Grant, M.D.

J. B. Gibson, M.D., C.B.,
Director General Army Medical Department.

Army Medical Department,
6th December 1860.

Sir,

In forwarding the enclosed form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left-hand corner.

I have, &c.
(Signed) J. B. Gibson,
Director General.

J. G. G. Grant, Esq.,
lcot Place West, Kennington Road.

here will not in future be any appointments made for special service in India, tary of State for War will permit any gentleman under 28 years of age udying for the Indian medical service to compete at the next examina- nents in the Medical Department, provided he has the qualifications

Sir,

8, Walcot Place West, Kennington Road,
8th December 1860.

Sir,

In accordance with your instructions, dated 6th December (No. 18,858—188), I have the honour to enclose you the form, filled up to the best of my present ability. Before the next examination I could obtain a qualification in surgery, in addition to the M.D. I already possess. On the strength of the late Indian regulations (which held no objection to the married), and with the hope of an appointment in Her Majesty's Indian forces after the usual examination, I married in August last before leaving Scotland, to avoid the expense and delay of a return to that country, understanding at that time that I should most probably (if successful) be sent to Chatham, and thence to India; but the recent alteration in regulations (as I see by the schedule supplied) excludes me from the next examination, unless my unfortunate case be deemed worthy of consideration. Apologising for further trouble on a subject in which I have reason already to thank you,

I am, &c.
(Signed) J. G. G. Grant.

J. B. Gibson, M.D., C.B.,
Director General Army Medical Department.

Qualifications and Examination of Candidates for Commissions in the Army Medical Service.

For particulars, *see* case of Dr. Thompson, page 10.

Schedule of Qualifications.

I, James George Garrow Grant, 26 years of age in January last, *vide* accompanying certificate, a candidate for employment in the Medical Department of the Army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am not unmarried, and that I labour under no mental nor constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have the degree of M.D. from the University of Edinburgh, dated 1st August 1859.

(Signed) James George Garrow Grant.

8, Walcot Place West, Kennington Road,
8th December 1860.

Army Medical Department,
15th December 1860.

Sir,

In acknowledging the receipt of your letter of the 8th instant, enclosing a schedule of your professional education, I have the honour to acquaint you that by the Royal Warrant of the 13th January 1860, regulating the admission of medical officers to the Indian military service, it is laid down that a candidate must possess both a medical and a surgical qualification before he can be admitted to the competitive examination for a commission, and it will be equally necessary for you to obtain a diploma or licence to practise surgery, in addition to your degree in medicine, before your name can be placed on the list of candidates for general service for the examination which will take place in February 1861, the Secretary of State for War having sanctioned any gentleman under 28 years of age who has been studying for the Indian medical service to compete at the next examination for appointments in the Medical Department of the Army, provided he has the qualifications otherwise required.

I have, &c.
(Signed) J. B. Gibson,
Director General.

J. G. G. Grant, Esq.,
8, Walcot Place West, Kennington Road.

I beg to add that the subject of marriage is at present under the consid[illegible]
Mr. Secretary Herbert.

Sir, 8, Walcot-place, Kennington Road.

WILL you oblige me with any information in your power with regard to the subject of my last letter, dated 8th December 1860? I am sorry to trouble you, but if permitted to complete at the approaching examination in February, I shall require as much time as possible to prepare in qualifications for the purpose.

I am, &c.
(Signed) J. G. G. GRANT, M.D.

The Secretary, Army Medical Department,
6, Whitehall Yard.

Army Medical Department,
Sir, 9th January 1861.

WITH reference to my letter of the 5th*, and to your reply of the 13th ultimo, I have the honour to submit, for the consideration of the Secretary of State for War, the enclosed applications from Messrs. J. G. G. Grant and E. Foster, candidates for appointments in the army, who have been studying with a view to enter the Indian medical service, and who are both married, soliciting that the latter circumstance may not be considered an objection to their being allowed to attend the next competitive examination.

* Page 27.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

The Secretary for Military Correspondence,
&c. &c. &c.

Sir, War Office, 21st January 1861.

I HAVE laid before the Secretary of State for War your letter of the 9th instant, with its applications (herewith returned), from Messrs. J. G. G. Grant and E. Foster, who had been studying for the Indian medical service, to be allowed to attend the next competitive examination for medical appointments in the army, notwithstanding the fact of their being married.

In reply, I am to state that as much embarrassment might be caused by complying with these gentlemen's wishes, Lord Herbert would wish them to be informed that their request cannot be granted.

I have, &c.
(Signed) F. PAULET.

The Director General
of the Army Medical Department,
&c. &c. &c.

Army Medical Department,
Sir, 25th January 1861.

WITH reference to previous correspondence relative to your being allowed to attend the next competitive examination for medical appointments in the army, notwithstanding the fact of your being married, I have now the honour to inform you that the subject, having been under the consideration of the Secretary of State for War, his Lordship has decided that your application cannot be entertained.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

J. G. G. Grant, Esq.,
8, Walcot Place W., Kennington Road.

No. 7.

CORRESPONDENCE relative to Mr. E. FOSTER.

39, Bloomsbury Street, New Oxford Street, W.C.,
8th December 1860.

[redacted]erved in the "Lancet" an advertisement that in future there will be no [redacted]ion for the Indian medical service, I beg to ask whether gentlemen who [redacted]e admitted as candidates for any branch of the army medical service,

if it be necessary for all candidates to be between 21 and 26 years of age, and to possess a double qualification.

Is the diploma of the Faculty of Physicians and Surgeons, Glasgow, received as a double qualification?

I am, &c.
(Signed) E. Foster.

J. B. Gibson, Esq.,
Army Medical Department.

Army Medical Department,
12th December 1860.

Sir,

In acknowledging the receipt of your letter of the 8th instant, I have the honour to inform you, that any candidate over 26, but under 28 years of age, who can afford satisfactory evidence that he has been studying with a view of entering the Indian medical service (now abolished), will be allowed to attend the next competitive examination for candidates for commissions in the general service, provided he has the qualifications otherwise required; and with regard to the marriage of such candidates, this subject is now under the consideration of the Secretary of State for War.

I beg to add that a double qualification is indispensable, one to practise medicine, and one to practise surgery, which must be obtained from two distinct bodies. The diploma referred to by you can be received as a surgical qualification only.

I have, &c.
(Signed) J. B. Gibson,
Director General.

E. Foster, Esq.,
39, Bloomsbury Street, New Oxford Street, W.C.

39, Bloomsbury Street, New Oxford Street, W.C.,
12th December 1860.

Sir,

I beg to acknowledge the receipt of your letter of this day, and to thank you for the information you have afforded me. I would further beg to ask if the licence of the Apothecaries Hall, Dublin, will be received as a medical qualification; also, how soon and by what means I shall ascertain the decision of the Secretary of State regarding married candidates? Your letter bears number 18,858—203.

I am, &c.
(Signed) E. Foster.

J. B. Gibson, Esq., Director General; or the
Under Secretary of State for War.

P.S.—Please send me a copy of the regulations for the army medical service; also, one of chart to be filled up.

Army Medical Department,
17th December 1860.

Sir,

In forwarding the enclosed form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left-hand corner.

I have, &c.
(Signed) J. B. Gibson,
Director General.

E. Foster, Esq.,
39, Bloomsbury Street, New Oxford Street, W.C.

P.S.—The licence of the Apothecaries Hall, Dublin, is not received as a medical qualification for appointments in the army, and the decision of the Secretary of State for War relative to marriage will be communicated to you as soon as I am informed of the same.

39, Bloomsbury Street, W.C., New Oxfo
18th December 1860.

Sir,

I have the honour to acknowledge yours of yesterday; and beg to stat
Hall of Ireland is not acknowledged by the Army Board as a medical quali
not be able to present myself at the next examination; but as the ser

object, I await your reply regarding marriage. Your last communication bears number 18,858—203 A.

I am, &c.
(Signed) E. Foster.

J. R. Gibson, Esq.,
Director General.

Army Medical Department,
5th January 1861.

Sir,

With reference to your letter of the 18th ultimo, I have the honour to request you will immediately return the schedule sent you on the 17th December last, filled up as far as your education has procedeed; and with regard to marriage, I beg to inform you that the subject is still under the consideration of the Secretary of State for War.

I am, &c.
(Signed) J. B. Gibson,
Director General.

E. Foster, Esq.,
39, Bloomsbury Street, New Oxford Street, W.C.

Mr Foster's application referred to Secretary for Medical Correspondence, 9th January; *see* supra, page 31.

For War Office reply, dated 21st January, *see* supra, page 32.

Army Medical Department.
25th January 1861.

Sir,

With reference to previous correspondence relative to your being allowed to attend the next competitive examination for medical appointments in the army, notwithstanding the fact of your being married, I have now the honour to inform you that, the subject having been under the consideration of the Secretary of State of War, his Lordship has decided that your application cannot be entertained.

(Signed) J. B. Gibson,
Director General.

E. Foster, Esq.,
39, Bloomsbury Street New Oxford Street, W.C.

No. 8.

No. 8.

Correspondence relative to Mr. Goodall.

(18,858—263.)

James Brown Gibson, Esq., M.D., C.B., Director General, Army Medical Department.

Sir,

I have the honour to request that you will forward me information respecting the time during which the next Army Medical Examinations will occur, and other particulars necessary to be known.

I have, &c.
(Signed) Henry Goodall, M.D.
Honorary Physician, Royal Infirmary, Glasgow.

(18,858—263.)

Army Medical Department,
31st January 1861.

[illegible]rding the enclosed form, I have the honour to request that you will be pleased [illegible] blanks thereof, so far as your education has proceeded, and immediately [illegible]e to me, with a letter from yourself, addressed outside to the Under Secretary

Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left-hand corner.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

P.S.—The next Competitive Examination will commence on the 18th proximo.

H. Goodall, Esq.,
Royal Infirmary, Glasgow.

(18,858—263 A.)

JAMES BROWN GIBSON, Esq., M.D., C.B., Director General, Army Medical Department.

Royal Infirmary, Glasgow,
Sir, 4th February 1861.

I HAVE the honour to forward you the enclosed form, with the blanks filled up as desired. The degree, diploma, &c. I will lodge at the War Office when I go down to London, which will be at the end of this week.

I have, &c.
(Signed) HENRY GOODALL.

QUALIFICATIONS and EXAMINATIONS of CANDIDATES for COMMISSIONS in the ARMY MEDICAL SERVICE.

For particulars, *see* case of Dr. Thompson, page 10.

SCHEDULE of QUALIFICATIONS.

Recommended by Allen Thomson, M.D., Professor of Anatomy in the University of Glasgow.

I, Henry Goodall, 24 years of age in January last, a candidate for employment in the Medical Department of the Army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am unmarried, and that I labour under no mental or constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have the degree of M.D. from the University of Glasgow.

I have a diploma in surgery from the Royal College of Surgeons of England.

(Signed) HENRY GOODALL.

2d February 1861,
Royal Infirmary, Glasgow.

(18,858—263 A.)

Army Medical Department,
Sir, 6th February 1861.

IN acknowledging the receipt of your letter of the 4th instant, I have now the honour to inform you that the next competitive examination will take place at Chelsea Hospital on Monday the 18th instant at 10 o'clock, A.M.

You will therefore be pleased to attend at this office on Thursday the 14th instant, between the hours of 11 and 3 o'clock, bringing with you your degrees, diplomas, licences, certificates of age and moral character, and letter of recommendation, for examination and registry.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

H. Goodall, Esq.
Royal Infirmary, Glasgow.

(18,858—263 B.)

HENRY GOODALL, M.D. (Glasgow University).

I CERTIFY that this gentleman's degree, diploma, and certificates are in conformity with the regulations.

Certificate of age herewith.

(Signed) THOS. GEO. FITZGERALD,
Staff Surgeon.

Register of the Birth of the under-mentioned Child.

Name.	Date of Birth.	Parent's Name.	By whom the Ceremony performed.
Henry -	2d January 1837 -	Henry Goodall -	Baptized, 8th January 1837, by me, ARTHUR HAMILTON, Chaplain.

Tavoy, 8 January 1837.

(18,858—263 B.)

College, Glasgow, 9th February 1861.

I HAVE much pleasure in recommending Dr. Henry Goodall as well qualified to be a candidate for a medical appointment in the army.

(Signed) ALLEN THOMSON, M.D.,
Professor of Anatomy.

Army Medical Department,
16th February 1861.

Sir,

ADVERTING to previous correspondence, I have now the honour to request you will call upon me at this office on Monday morning next, the 18th instant, instead of attending at Chelsea Hospital.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

H. Goodall, Esq., 1, St. Augustine Road,
Camden Town, N.W.

1, St. Augustine Road, Camden Town,
23d February 1861.

My Lord,

IN having the honour of addressing you, I beg to call your attention to the following facts:—I was a candidate for an appointment in the Medical Department of Her Majesty's general military service. My application as a candidate was accepted, and I received a ticket for the examinations, which commenced on the 18th current. According to request, I attended upon the Director General on the morning of the same date, when I was informed by him that he had received orders to exclude from competing at the examinations all those born in India. The reasons given for which were, that it had been found by experience that all such persons are not capable of withstanding the injurious effects of the extremes of climate which Her Majesty's army had to experience. Allow me, with all deference, to state that such a decision, made at such a moment, is extremely unjust for all whom it especially concerns; for me it is particularly so.

First. I have been for the last 10 years a student in this country, between five and six of which I devoted myself strictly to medicine, and for the last two years was a house surgeon in the Glasgow Royal Infirmary. I had always in view the military medical service.

Second. My father, Henry Goodall, is at present Surgeon Major in the 25th Madras Native Infantry, stationed at Mercara. He has served for the last 30 years. May I put the question, Are Her Majesty's servants to be rewarded for their long services by their children being deprived of the rights which they themselves enjoy?

Third. I was born in Tavoy, one of Her Majesty's Tenasserim provinces, not in India at all.

Lastly. I have resided for above nine years in Scotland without a day's illness of consequence. In colour, habits, and religion I am a Briton, and legally and physically I am as much a Scotchman as if I had been born and lived all my life in Scotland.

I hope, therefore, you will be pleased to give my case a further consideration.

I have, &c.
(Signed) HENRY GOODALL.

The Secretary of State for War,
War Office, Pall Mall.

Sir,

Sir, War Office, 4th March 1861.

I AM directed by Lord Herbert to acquaint you that your letter, dated 23d instant, has been referred to the Director General of the Army Medical Department, with a view to an inquiry and report whether you, and certain other gentlemen similarly situated, are really, as assumed, constitutionally unfit to withstand the various climates in which you would be required to serve in the event of your obtaining a commission in the Army Medical Department.

I have, &c.
(Signed) E. LUGARD.

H. Goodall, Esq.,
&c. &c.

(18,858—263 B.)

Army Medical Department,
5 March 1861.

Sir,

THE Secretary of State for War having appointed a board, consisting of Sir R. Martin, Sir John Liddell, and myself, to furnish a report as to your fitness physically for employment in the Army Medical Department, I have the honour to hope you will be able to make it convenient to attend at this office at two P.M. to-morrow.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

Dr. H. Goodall, 1, St. Augustine Road,
Camden Town, N.W.

Sir, War Office, 23d April 1861.

WITH reference to my letter of the 4th instant, I am directed by the Secretary of State for War to acquaint you that Lord Herbert regrets that the opinion of the board of medical officers by whom you were examined was to the effect that you are constitutionally unfit for employment in the various northern climates in which the British army is called upon to serve.

I am to add that this result would have been communicated to you sooner, but Lord Herbert was under the impression that this had already been done by the Director General of the Army Medical Department.

I have, &c.
(Signed) E. LUGARD.

H. Goodall, Esq.
&c. &c.

The Right Honourable Lord HERBERT, Secretary of State for War.

1, St. Augustine Road, Camden Town,
1 May 1861.

My Lord,

I HAD the mortification of receiving through Sir Edward Lugard your Lordship's intimation, that the medical board appointed by your Lordship to examine me had found me constitutionally unfit for employment in the various northern climates in which the British army is called upon to serve. I am also a medical man, and possessed at least so much of apprehension as to understand the meaning of a rational sentence when uttered in my hearing.

But I am perfectly at a loss to comprehend how I am thus constitutionally unfit. Do the above examiners find any symptoms of lurking disease in any organs of my body? Not if I remember aright the words of the consultation carried on in my hearing.

I was examined for upwards of an hour, during which time I had to strip my chest twice. Sir Ranald Martin and the Director General did not agree. They called in a fourth medical gentleman, who gave my chest a most thorough examination. It was his opinion, that, as far as he could find, nothing abnormal existed in my chest.

But, my Lord, I no longer press my rights as a British subject to compete for an assistant surgeonship in the British army. But I hope your Lordship will see the justness

of my claim, when I demand to be provided for in an equivalent way. A few strokes of the pen are only necessary to state so simple a sentence as that I am constitutionally unfit; but it becomes a most serious matter with me. I crave your Lordship to give attention to them for a few moments.

At an early age I was sent to this country for my education; I have been 10 years in it, during which period I was put to the best education that Glasgow could afford. I was three years in the High School of that city, and six at the University. I had not been long at the medical classes, when I read in a pamphlet the words which caused me so to qualify myself as to be able to compete for an assistant surgeonship in the British army; that pamphlet was under the signature and sanction of the British Government. I applied to stand as a candidate. I am found qualified in every point, even physically; for the medical gentlemen appointed to examine the candidates as to their physical condition, after examining me, wrote the word "fit" opposite my name. A card is given me for the examination. Just on the eve of them, I receive a note from the Director General to attend upon him at his office. When there, I am informed that I am prohibited from competing.

The reason assigned is, that being born in India, my constitution will not be able to endure the various climates Her Majesty's army has to experience.

I am found deficient in a qualification without warning, and suddenly made, and not stated in the above pamphlet, nor in any other paper; that very pamphlet at the time the Director General spoke was hanging in the waiting room of his office. I resolved to enter the army, because it was the best thing I could do in the circumstances I was placed.

I gave up the situation of house surgeon, which I held at the Glasgow Royal Infirmary, in order to come to London and compete, according to intimation from the Director General, and then I am most unceremoniously thrown adrift.

To set up a practice it requires means, and to acquire any other settled appointment influence is necessary. It becomes Her Majesty's Government now to do me justice by supplying me with either the one or the other; and such means or such an appointment as will place me in station equivalent to that held by an assistant surgeon in the British army. Hoping that your Lordship will perceive the justness of my claims, and awaiting the honour of a reply,

I have, &c.
(Signed) Henry Goodall.

Sir, War Office, 17th May 1861.

I am directed by the Secretary of State for War to acknowledge the receipt of your letter of the 1st instant, and to acquaint you in reply that Lord Herbert is unable to admit the claim which you have advanced, and he regrets that he has no appointment at his disposal which would enable him to meet your wishes.

I have, &c.
(Signed) E. Lugard.

H. Goodall, Esq.
&c. &c.

No. 9.

Correspondence relative to Mr. A. Solomon.

(18,858—264.)

No. 8, Saville Row, Walworth Road,
Sir, 1st February 1861.

I have the honour to present myself as a candidate for the next competitive examination for Her Majesty's Army Medical Department, and beg to state that owing to the late Indian mutiny, which materially destroyed the Agra church, wherein I was baptized, I had no means of obtaining my baptismal certificate before I left India; nevertheless, I can most confidently assure your Honourable Board that I have not yet passed my 28th year of age, and that I am at present between 21 and 28 years of age, in the strictest sense of the words and required regulation.

I have, &c.
(Signed) Alex. Solomon.

Dr. Gibson, C.B.,
Director General H.M. Army,
Medical Department.

It was injudiciously placed close to the railway station, a locality deficient in sanitary police, and so far from the sea shore, that the fatigue of going to the sea interfered with the benefit that was expected from sea bathing. The expediency of erecting permanent buildings there for the accommodation of a large body of invalids throughout the year had been questioned, and a special report on the subject was rendered to Government.

The strength of the detachment which was encamped at Bulsar from 1st January to 13th June was 36; the average sick in hospital during the same period was 4·5.

Ghizree.—The buildings of this sanitarium are of temporary construction. Better buildings were intended to be built, but the question again arose as to the comparative advantages of this situation and Munora Point, and caused delay. There was little alteration or addition made during the year.

The average strength during the year was 51, and the mean daily sick in hospital 5·2.

NATIVE TROOPS.

Increase and decrease.

From a statement furnished from the office of the Adjutant General of the Army, the strength of the native army on 1st January 1865 was 26,102, and during the year 1,696 recruits joined it, while 493 deaths were reported. 1,015 were invalided, and 758 left through reduction of establishment, summary dismissal, and desertion. On the 1st January 1866 the strength was 25,532. The mean of the numbers borne on the rolls at the beginning and the end of the year was 25,817.

The average strength taken from the monthly returns of hospitals was 24,737. This represents the number of those present with their corps, and the difference between this average and that founded on the Adjutant General's statement, and amounting to 1,080, is probably the number absent on leave; it is 4 per cent. of the entire army.

The deaths recorded in the military returns far exceed in number those in the medical returns, and even calculating them on the entire mean strength, they are in ratio much greater than the deaths in hospital calculated on the actually present strength. The former are 18·1 per mille, the latter only 14·8.

It is likely that among those who obtained leave of absence there were many invalids, and that the mortality among them was great. The 128 deaths that are in excess of those that took place in hospital are 11·8 per cent. of the 1,080, by which the entire strength of the army exceeded the present strength shown in the hospital returns.

Sickness and mortality.

The mortality in hospital from 1st January to 31st December in 1865, does not differ much from 14·3, which it was in 1864. The mortality in the native army is less than it would be were there the same impediments to the speedy discharge of the sickly that there is among the British troops serving in India. Exclusive of cholera, the mortality in hospital during 1865 was 9·6 per mille.

The proportion of hospital admissions to strength was 1068·7 per mille, which was greater than in the preceding year. The number daily sick was 40·5 in a thousand. (Table XVII.)

The deaths from zymotic diseases were 10·9 of the strength, and 73·9 per cent. of all deaths. From local diseases 2·5 in a thousand died. (Table XVIII.)

Miasmatic diseases caused 695·8 admissions in a thousand of strength, or 65·0 per cent. of all admissions, and 61·9 of all deaths. Dietic diseases caused 9 per cent. of the deaths. In decreasing order, the mortality was from diseases of the respiratory system 7·4, of the digestive system 4·1, of the nervous system 3·3 per cent., and from atrophic disease also it was 3·3 of the total mortality. From each of the orders phthisic, enthetic, and accident or violence, it was 1·9 per cent. (Table XIX.)

The deaths from cholera were 5·2 per mille of strength, and were 35·1 of all deaths. In every thousand men 2·3 died of fever, 1·3 of scurvy, and one of dysentery and diarrhœa. The deaths from these diseases were in the ratio to all deaths of 15·6 per cent. from fever, 9·1 per cent. from scurvy, and 7·4 from dysentery and diarrhœa. Deaths from hepatic disease and icterus together amounted to 1·2, and from phthisis pulmonalis to 1·6 per cent. of the entire mortality.

The exemption of native troops from deaths from the small-pox is worthy of notice. It may be attributed to the attention that is given to vaccination throughout

throughout the native army. Not only is it the care of the medical officer that the men themselves are protected from the disease, but vaccination is assiduously practised among the families, and the monthly returns seldom have to show any unprotected, except very recently born children. (Table XX.)

POONA DIVISION.

Poona.—A third native infantry regiment arrived during the year, and was lodged partly in thatched huts hastily erected, and partly in the Native Sappers old lines. The Sappers went into tents. There were many admissions for guinea-worm in the other two regiments; and the use of a well, which was suspected of being the source of the evil, was prohibited. The cavalry lines are on a patch of gravelly ground, in the middle of black soil. They were placed near the river with a view to convenience in watering the horses, but as the river ceased to flow during several months, the expectation was disappointed. There was inconvenience and hardship from want of water. The want of latrines was complained of. A permanent hospital was sanctioned to replace the present temporary building.

The native portion of the force consisted of three regiments of infantry and a regiment of cavalry. The average strength at the station was 2,273, and the sick in hospital were 61·5 in a thousand. Cholera caused 3·1 deaths per mille, and fever 0·9, which was a low ratio, when the admissions for it were 601·8. One of the regiments had a wing stationed at Tana, where the duty was said to be severe. There were cases of scurvy both in the cavalry and the infantry; the medical officer of the former corps mentions the inconvenient distance of the men from a bazar where they could obtain vegetables and meat. One regiment lost two men from dracunculus, the ankle joint being affected.

Kirkee.—Sappers and Miners, of strength 160, were the only native troops stationed there. They lost four of their number by cholera, and one by dysentery. New lines are being built.

Ahmednugur.—The condition of the lines and of the regimental bazar, and the progressive filling up by it of the small interval between the town and the lines were mentioned in the Inspection Report, which is in the Appendix. The hospital was deficient in ventilation.

The mean strength of the regiment was 662, and the average number in hospital was but 33 per mille. Cholera caused seven deaths. The regiment moved into tents, and although there was heavy rain, the progress of the disease was at once arrested. The only other death was from fever.

Sholapoor.—In the report of the inspection, which is in the Appendix, the objectionable circumstance was mentioned of the regimental bazar filling up the interval that should have been left between the lines and the Sudur Bazar. An estimate of the cost of removing the regimental bazar was ordered.

The infantry and the squadron of cavalry together had an average strength of 693, and only 187 per mille constantly in hospital. There was no cholera, and no death from fever, and comparatively few admissions for that disease.

Seroor.—Occupied by the Poona Irregular Horse. The lines are near a small river. Almost every hut has a small court enclosed with a mud wall about six feet high, in which are the cooking place, bathing place, and privy.

The average strength of the corps at head quarters was 252, and 27 per mille were daily in hospital. Cholera appeared, but was not fatal. There were in all three deaths; they were from fever, dysentery, and diarrhœa.

Maligaum.—The native infantry regiment built for itself new lines.

The strength was 630; the daily sick 21 per mille. Eight died of cholera and two of fever.

Aseerghur.—A tank close to the native infantry lines had become offensive, and was being cleaned out. The latrines were to windward of the European barracks, and occasionally offensive. An old building, the Kiladar's house, obstructed the breeze. The Sudur Bazar at the foot of the hill was unhealthy; the inhabitants were anæmic.

The strength of the detachment was 178, the number in hospital daily was four.

four. The only two deaths were from cholera. The admissions for fever were in the ratio of 505 per mille.

Dhoolia.—The average strength of the troops was 616. Thirty-one per mille were daily in hospital. There were 10 deaths, of which three were from cholera, one from fever, one from dysentery, and four from scurvy. This last disease is said to have begun to be prevalent in June, and to have continued so until the end of the year, when it appeared to be declining; 38 men were admitted for it.

MHOW DIVISION.

Mhow.—The men of the Native Infantry were building new lines, and had completed those of one regiment, the sites being on black soil, near the base of the low ridge on which the cavalry barracks were built. There was much to be done in draining the ground. The only latrines at present are trenches in the ground. The strength was 1,141, and the daily sick were about 59 per mille. The deaths were 14, or at the rate of 12·3 per mille; two were from cholera, and seven from fever, and there was only one death out of 11 admissions for scurvy.

Indore.—A wing of Native Infantry was stationed there, and was relieved from Mhow every six months. The lines are about two miles south-west from the city, on elevated ground, surrounded with black soil. They face the civil lines on the south. The rooms are small and unventilated. New huts were recommended to be built. The remains of former lines had not been removed. There were no latrines. The sick were treated in Holkar's General Hospital, which was unsatisfactory.

The detachment had a mean strength of 206, of which four were daily sick. The only death was caused by cholera.

Augur.—The wing of a Native Regiment stationed there, with a regiment of Central India Horse, occupied the former lines of the Gwalior Contingent Infantry. They were of sun-dried brick and were tiled. They had been spoilt by the verandahs being built up so as to obstruct ventilation.

The detachment had a mean strength of 291, and had 3·4 per mille always in hospital. The only three deaths were caused by cholera.

Mehidpoor.—The wing of a Native Infantry Regiment was stationed there. The cantonment is in a depression close to the Sipra river, which is nearly stagnant from being dammed some miles below. The ground is difficult to drain and is liable to inundations. The removal of the cantonment to higher ground was contemplated.

The average strength was 334, of which five were constantly in hospital, or about 15 per mille. The only death that occurred was from cholera.

Neemuch.—The strength of the troops was 897, and 2·9 per mille were always sick. The death from all causes were four, or at the rate of 4·5 per mille. One death was from cholera and one was from fever. The fever admissions were 620 per mille. Cholera was much more severe among the European than the Native troops at this station.

Nuserabad.—The ventilation of the hospital of the Native Infantry was improved.

The strength of infantry and cavalry was 864, and 8·4 per mille were daily sick. Although cholera twice attacked the European troops the Native troops had entire exemption from it. There was no fatal case of fever, and the admissions for that disease were but 367 per mille of strength. There were, however, eight deaths in the year, three of which were from scurvy out of six admissions.

NORTHERN DIVISION.

Surat.—The surface drains for monsoon waters were not sufficient. The ground between the lines and the hospital was uneven. The lines were bad. The building of new lines was said to be intended. Water for drinking had to be brought from a distance.

The strength of the infantry regiment forming the garrison was 607. The proportion in hospital was 26 per mille.

The admissions exceeded the strength in number, being 1067·5 per mille. There were 11 deaths at the station, and nine of them were from cholera.

Broach.—The lines of the small detachment were said to be high and airy, and the men to have ample accommodation in the pendal, the space for each being double what it had been.

The detachment had a mean strength of 63. The admissions were very numerous, being 91 in the year. Fever was prevalent, but there were no deaths from any cause.

Baroda.—The average strength of the infantry forming the native part of the force was 654, of whom 20 were daily in hospital. The admissions into hospital were 656, and there were in all 12 deaths. Cholera began early in June, having been introduced by two men who had, contrary to orders, visited the city where it was prevalent; five men died of the disease, and also some women and children in the regiment. In the Sudur Bazar it was less severe than in the preceding year. Two died of fever and one of diarrhœa. There were two deaths from scurvy, which had been contracted by the sufferers when on furlough.

Ahmedabad.—The means for maintaining cleanliness in the regimental lines, bazars, and hospitals were sufficient, but in other parts of the cantonment, which is extensive, sweepings were frequently allowed to accumulate for some days. When collected they were deposited in a pit on the bank of the river, objectionably near to the Sudur Bazar. The want of latrines for the regiments and bazar inhabitants was much felt. The lines of one of the regiments were lately rebuilt.

There were two infantry regiments with average strength of 1,223. The ratio of daily sick was 18·7 to a thousand. The ratio of deaths from all causes 36·8, or exclusive of cholera only 8·2. The admissions for fever were comparatively few, and there were no deaths from that cause. Two died from dysentery and one from diarrhœa. There were three admissions and two deaths from scurvy.

Deesa.—In the Native Infantary Hospital the ventilation was improved.

The average strength of infantry and cavalry was 868; the ratio of daily sick per mille 27, and of deaths in the year 4·6. One of the four deaths was from fever, and one was from phthisis pulmonalis. There were no cases of cholera. Five were admitted for scurvy, but there were no deaths from it.

Rajkote.—A gutter was cut in the rear of each line of huts, and it kept the men's habitations drier than they had been before. There was want of proper drainage for waste ablution water.

The daily sick were in the ratio of 36 in a thousand; the average strength was 728; it was composed of infantary, cavalry, and artillery. There were eight deaths, of which one was from fever, one from dysentery, and one from diarrhœa. There were 31 admissions for scurvy, and one death from it. The prevalence of the disease was attributed to scarcity of fresh vegetables and bad quality of the grain at Dwarka, where a large detachment was furnished from Rajkote.

Bhooj.—The average strength present at the station was 396; the mean daily sick 18, or in the proportion of 45 in a thousand. The admissions were numerous, and 317, or more than half, were for fever, but there was no death from that disease. Of 12 admitted for scurvy, two died. The entire deaths from all causes were six.

SIND DIVISION.

Kurachee.—The condition of the lines of the Belooch Regiment was bad, there being a cess-pit in connection with every married man's hut. The bathing water flowed from the hut to an excavation outside, where it formed an offensive pool. This evil was in some measure checked. The married men's huts afforded to each person—man, woman, or child—40 feet floor superficies, and 360½ feet of space. Each single man had a superficies of 70 feet, and space of 670 feet. The latrines were foul and without soil-vessels. The neighbourhood of the hospital was unclean.

The average strength of Native troops was 462, of which 10 were in hospital.

Third. I was born in Tavoy, one of Her Majesty's Tenasserim provinces, not in India at all.

Lastly. I have resided for above nine years in Scotland without a day's illness of consequence. In colour, habits, and religion, I am a Briton, and legally and physically I am as much a Scotchman as if I had been born and lived all my life in Scotland.

I hope, therefore, you will be pleased to give my case a further consideration.

I have, &c.
(signed) *Henry Goodall.*

The Secretary of State for War,
War Office, Pall Mall.

Sir, War Office, 4 March 1861.

I AM directed by Lord Herbert to acquaint you that your letter, dated 23d inst., has been referred to the Director General of the Army Medical Department, with a view to an inquiry and report whether you, and certain other gentlemen similarly situated, are really, as assumed, constitutionally unfit to withstand the various climates in which you would be required to serve in the event of your obtaining a commission in the Army Medical Department.

I have, &c.
(signed) *E. Lugard.*

H. Goodall, Esq.,
&c. &c. &c.

(18,858—263 B.)

Army Medical Department,
5 March 1861.

Sir,

THE Secretary of State for War having appointed a Board, consisting of Sir R. Martin, Sir John Liddell, and myself, to furnish a report as to your fitness physically for employment in the Army Medical Department, I have the honour to hope you will be able to make it convenient to attend at this office at two p.m. to-morrow.

I have, &c.
(signed) *J. B. Gibson*, Director General.

Dr. H. Goodall, 1, St. Augustine Road,
Camden Town, N.W.

Sir, War Office, 23 April 1861.

WITH reference to my letter of the 4th instant, I am directed by the Secretary of State for War to acquaint you that Lord Herbert regrets that the opinion of the Board of medical officers, by whom you were examined, was to the effect that you are constitutionally unfit for employment in the various northern climates in which the British army is called upon to serve.

I am to add, that this result would have been communicated to you sooner, but Lord Herbert was under the impression that this had already been done by the Director General of the Army Medical Department.

I have, &c.
(signed) *E. Lugard.*

H. Goodall, Esq.,
&c. &c. &c.

The Right Honourable Lord Herbert, Secretary of State for War.

1, St. Augustine Road, Camden Town,
1 May 1861.

My Lord,

I HAD the mortification of receiving through Sir Edward Lugard your Lordship's intimation, that the Medical Board appointed by your Lordship to examine me had found me constitutionally unfit for employment in the various northern climates in which the British army is called upon to serve. I am also

No. 8.
Correspondence.

Mr. Goodall.

a medical man and possessed at least so much of apprehension as to understand the meaning of a rational sentence when uttered in my hearing.

But I am perfectly at a loss to comprehend how I am thus constitutionally unfit. Do the above examiners find any symptoms of lurking disease in any organs of my body? Not if I remember aright the words of the consultation carried on in my hearing.

I was examined for upwards of an hour, during which time I had to strip my chest twice. Sir Ronald Martin and the Director General did not agree. They called in a fourth medical gentleman, who gave my chest a most thorough examination. It was his opinion, that as far as he could find, nothing abnormal existed in my chest.

But, my Lord, I no longer press my rights as a British subject to compete for an assistant surgeonship in the British army. But I hope your Lordship will see the justness of my claim, when I demand to be provided for in an equivalent way. A few strokes of the pen are only necessary to state so simple a sentence as that I am constitutionally unfit; but it becomes a most serious matter with me. I crave your Lordship to give attention to them for a few moments.

At an early age I was sent to this country for my education; I have been 10 years in it, during which period I was put to the best education that Glasgow could afford. I was three years in the High School of that city, and six at the University. I had not been long at the medical classes, when I read in a pamphlet, the words which caused me so to qualify myself as to be able to compete for an assistant surgeonship in the British army; that pamphlet under the signature and sanction of the British Government. I applied to stand as a candidate. I am found qualified in every point, even physically; for the medical gentlemen appointed to examine the candidates as to their physical condition, after examining me, wrote the word "fit" opposite my name. A card is given me for the examination. Just on the eve of them, I receive a note from the Director General, to attend upon him at his office. When there, I am informed that I am prohibited from competing.

The reason assigned is, that being born in India, my constitution will not be able to endure the various climates Her Majesty's army has to experience.

I am found deficient in a qualification without warning, and suddenly made, and not stated in the above pamphlet, nor in any other paper; that very pamphlet at the time the Director General spoke, was hanging in the waiting room of his office. I resolved to enter the army, because it was the best thing I could do in the circumstances I was placed.

I gave up the situation of house-surgeon, which I held at the Glasgow Royal Infirmary, in order to come to London and compete, according to intimation from the Director General, and then I am most unceremoniously thrown adrift.

To set up a practice, it requires means, and to acquire any other settled appointment, influence is necessary. It becomes Her Majesty's Government now, to do me justice by supplying me with either the one or the other; and such means or such an appointment as will place me in station equivalent to that held by an assistant surgeon in the British army. Hoping, that your Lordship will perceive the justness of my claims, and awaiting the hour of a reply,

I have, &c.

(signed) *Henry Goodall.*

Sir, War Office, 17 May 1861.

I AM directed by the Secretary of State for War to acknowledge the receipt of your letter of the 1st instant, and to acquaint you in reply that Lord Herbert is unable to admit the claim which you have advanced, and he regrets that he has no appointment at his disposal which would enable him to meet your wishes.

H. Goodall, Esq.,
&c. &c. &c.

I have, &c.
(signed) *E. Lugard.*

— No. 9. —

CORRESPONDENCE relative to Mr. *A. Solomon.*

No. 9.
Correspondence.

Mr. A. Solomon.

(18,858—264.)

No. 8, Saville Row, Walworth Road,
1 February 1861.

Sir,

I HAVE the honour to present myself as a candidate for the next competitive examination for Her Majesty's Army Medical Department, and beg to state that owing to the late Indian mutiny, which materially destroyed the Agra church, wherein I was baptized, I had no means of obtaining my baptismal certificate before I left India; nevertheless, I can most confidently assure your Honourable Board that I have not yet passed my 28th year of age, and that I am at present between 21 and 28 years of age, in the strictest sense of the words and required regulation.

I have, &c.
(signed) *Alex. Solomon.*

Dr. Gibson, C. B.,
Director General H. M. Army,
Medical Department.

(18,858—264.)

Army Medical Department,
2 February 1861.

Sir,

IN forwarding the enclosed form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left hand corner.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

A. Solomon, Esq.,
8, Saville Row, Walworth Road.

(18,858—264 A.)

No. 8, Saville Row, Walworth Road,
4 February 1861.

Sir,

I BEG to forward the enclosed form duly filled up by me, and two certificates of moral conduct and character, from Rev. Goiran, Pro. Vicar Apost. of Western Bengal, and Rev. E. Fernandes, senior curate, M. A., as requested per letter No. 18,858—264, of 2d instant, from the Director General Medical Department. I also beg to apply for employment in the medical department of Her Majesty's army, and am ready to comply with every required conditions necessary for general services, whether at home or abroad.

I have, &c.
(signed) *Alex. Solomon.*

The Under Secretary of State
for War, War Office.

Cathedral House, 8 October 1860.

I HAVE much pleasure to certify that I have known Mr. Alex. Solomon for many years, and I have found him a most charitable and attentive man in his profession; an exemplary Catholic; and a worthy member of society.

(signed) *E. A. Fernandes,* Senior Curate, M. A.

Calcutta, 8 October 1860.

I have much pleasure of certifying that Mr. T. F. Solomon, who goes to England to get his diploma as M. D., is a good Catholic, and a person for whom I have much esteem.

(signed) *Aug. Goiran,*
Pro. Vicar Apost. of Western Bengal.

No. 9. Correspondence.

Mr. A. Solomon.

QUALIFICATIONS and Examination of Candidates for Commissions in the Army Medical Service.

For particulars, *see* case of Dr. Thompson, page 8.

SCHEDULE of Qualifications.

I, Alexander Solomon, do hereby declare that I was 27 years of age in April last, a candidate for employment in the Medical Department of the army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being Gazetted.

I declare that I am unmarried, and that I labour under no mental nor constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have a license to practise medicine from the Calcutta Medical College, recognised by London University.

I have a diploma in surgery from the same institution.

I have a license to practise surgery from the same institution.

Alexander Solomon,
4th February 1861.
8, Saville Row, Walworth Road.

(18,858—264 A.)

Army Medical Department,
9 February 1861.

Sir,

IN acknowledging the receipt of your letter of the 4th instant, enclosing a schedule of your professional education, I have the honour to inform you that if you can obtain a decree or license to practise surgery, from two separate and distinct bodies in Great Britain or Ireland, legally authorised to grant such, before the 18th instant, you will be allowed to attend the competitive examination on that day; but you must distinctly understand, that as you will be 28 years of age in April next, you will not be eligible to attend any examination after the present one.

I have, &c
(signed) *J. B. Gibson,*
Director General.

A. Solomon, Esq.
8, Saville Row, Walworth Road.

(18,858—264 B.)

8, Saville Row, Walworth Road, S.
11 February 1861.

Sir,

I BEG leave to acknowledge the receipt of your letter, No. 18,858—264, dated 9th instant.

As it would be obviously impracticable to obtain the requisite additional qualifications before Monday next, I have, after consultation with Dr. Sharpey, to whom you kindly gave an interview yesterday, made a statement of my case in form of a memorial to Lord Herbert, which I send enclosed, and which I beg you will be so kind as to present to his Lordship on my behalf.

I have, &c.
(signed) *Alex. Solomon.*

Dr. Gibson, C. B.,
Director General Army, Medical Department.

To the Right Honourable Lord *Herbert* of *Lea*, Her Majesty's Principal Secretary of State for War.

The humble Memorial of Alexander Solomon, of Calcutta, sheweth :—

THAT your memorialist went through a full course of medical study, in the medical college of Bengal, and, after passing the prescribed examinations, duly obtained the diploma or certificate of competency to practise medicine, surgery, and midwifery, which is conferred by that college, under the authority of Government.

That

That the said diploma has heretofore been accepted as sufficient qualification to enable a candidate to enter into the competitive examination for the commission of assistant surgeon in Her Majesty's Indian forces.

That, in full reliance on such sufficiency of qualification, your memorialist proceeded from Calcutta to London, with the view of undergoing the examination; but that since his arrival in this country he has found that in consequence of the examination for assistant surgeonships in the Indian army having recently merged in the examination conducted under the Army Medical Department, he will be required, in addition to his present qualification, to possess a "degree or license" in medicine, and a diploma or license in surgery, from two separate bodies in Great Britain or Ireland.

That your memorialist is prepared to comply with that condition before receiving a commission, and has, indeed, already taken the preliminary steps for obtaining the diploma of the Royal College of Surgeons; but the next examination for medical commissions in the army takes place on Monday, the 18th instant, within which time it is manifestly impracticable for him to fulfil the aforementioned condition, and before another army examination takes place he will be excluded altogether by being beyond the limit of age already extended in his case to 28.

Your memorialist, therefore, humbly begs that, in consideration of these circumstances, your Lordship will be pleased to grant him indulgence so far as to permit him in the meantime to enter the ensuing examination on the 18th instant, in virtue of his diploma from the College of Bengal, but on the express condition that, should he be so fortunate as to be placed, he shall provide himself with the further qualifications from medical bodies in Great Britain before he receives his commission.

Your memorialist trusts he may be permitted to state as additional claims to your Lordship's favourable consideration of his case, that while a student at the Bengal College, he obtained two certificates of honour, and that during the period of the Indian Mutiny, whilst house surgeon to the Medical College Hospital at Calcutta, he did extra duty in order to permit of the accommodation of the hospital being extended to sick and wounded men of Her Majesty's European army, and that in order to render this service, he cheerfully gave up for a time a private practice of (to him) considerable emolument.

(signed) *Alex. Solomon.*

Army Medical Department,
12 February 1861.

Sir,

I HAVE the honour to forward, for the consideration of the Secretary of State for War, the enclosed memorial from Mr. A. Solomon, a candidate for a commission in the Medical Department of the Army; and under the circumstances stated therein, I beg to recommend that Mr. Solomon may be permitted to attend the competitive examination on Monday, the 18th instant, upon the conditions stated, viz.: that should he be successful, he must, before he can be granted a commission, procure a medical and surgical qualification, in accordance with the existing regulations.

I have, &c.
(signed) *J. B. Gibson.*
Director General.

The Secretary for
Military Correspondence, &c. &c. &c.
War Office.

War Office, 18 February 1861.

Sir,

I AM directed by the Secretary of State for War to transmit to you, for the consideration of Sir Charles Wood, the accompanying copy of a letter from the Director General of the Army Medical Department, forwarding an application from Mr. A. Solomon, a native of India, to be permitted to attend the competitive examination for admission to the medical service of the army.

No. 9. Correspondence. Mr. A. Solomon.

Lord Herbert will be glad to be informed whether Sir Charles Wood is of opinion that Mr. Solomon, and gentlemen similarly situated, should be allowed to compete for these appointments.

I have, &c.
(signed) *Ed. Lugard.*

The Under Secretary of State
for India, &c. &c. &c.

*** For reply see letter of the 19th February page 5.

(18,858—264 C.)

8, Saville Row, Walworth Road,
19 February 1861.

Sir,

I HAD the honour on Tuesday, the 12th instant, to deliver to you a memorial for presentation to Lord Herbert, praying that his Lordship would be pleased to admit me to the competitive examination for assistant surgeoncy in the army on the 18th instant, on condition that I provided myself with the British qualifications in medicine and surgery before receiving a commission.

I beg leave now respectfully to request you will inform me what answer has been returned to my memorial.

I have, &c.
(signed) *Alex. Solomon.*

Dr. Gibson, C.B., Director General,
Medical Department.

War Office, 27 February 1861.

Sir,

WITH reference to your letter of the 12th instant, enclosing an application from Mr. A. Solomon to be permitted to attend the competitive examination for admission to the Army Medical Service, I am directed by the Secretary of State for War to transmit for your information and guidance, a copy of a letter which has been received in reply to the reference made to the India Office on this subject.

See page 5.

I have, &c.
(signed) *E. Lugard.*

The Director General
of the Army, Medical Department,
&c. &c. &c.

(Medical.)

Army Medical Department, 5 March 1861.

THE Director General presents his compliments to Mr. Solomon, and with reference to previous correspondence trusts he will be able to make it convenient to call at this office to-morrow at 2 p.m.

A. Solomon, Esq.,
8, Saville Row, Walworth Road.

(Medical 18,858—286.

Army Medical Department,
6 March 1861.

Sir,

IN acknowledging the receipt of your letter of the 19th ultimo., I have the honour to inform you that in consequence of the varied climates medical officers of Her Majesty's army have to encounter, it has been thought advisable (as will be seen on reference to the enclosed copy of a letter from the India Office) not to subject natives of India to the chances of service out of that country, and it has consequently been decided that native gentlemen should not be permitted to compete for appointments in the General Military Service. Should you wish to be employed in India, I would suggest that you apply direct to the Secretary of State for India.

India Office, 19/2/61. Colonel Baker to Secretary for Military Correspondence, War Office.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

A. Solomon, Esq.,
8, Saville Row, Walworth Road.

No. 9.
Correspondence.
Mr. A. Solomon.

33, East-street, Lamb's Conduit-street, W.C.,
13 March 1861.

Sir,

I BEG leave respectfully to solicit your attention to the following representation.

I am a native of India and a natural born subject of Her Majesty. In 1849 I entered the medical college of Bengal, and went through a regular course of medical study in that institution, during which I obtained two certificates of honour, and, after passing the prescribed examinations, received in 1854 the usual diploma, certifying my competency to practise the several branches of medicine.

My main inducement for taking this course was to qualify myself for a medical appointment in the Indian army, which, following the example of more than one of my countrymen, I hoped to obtain through the competitive examination for such appointments.

As, however, the means of defraying the expense of a voyage to England for that purpose were not at my command, I for the next few years did duty as sub-assistant surgeon, and added to my resources by private practice, which I cheerfully abandoned for a time during the exigency of the Indian mutiny, in order to do extra work as a public servant.

Having at length gathered sufficient funds, I proceeded to England, and arrived in London on the 24th January last, with the view of entering the competitive examination for an assistant surgeoncy in the Indian army. I did so in full reliance that the diploma of the Bengal College, conferred under the authority of Government, would now, as invariably heretofore, be accepted as sufficient qualification to admit me to the examination.

Having, however, learnt that the examination for India medical appointments had been recently merged in that conducted under the Medical Department of the British army, I, on the 31st of January, applied to the Director General to be admitted to the examination next ensuing; but after encountering various objections made to my medical qualification, under the new arrangement, I finally received a letter from the Director General (a copy of which is enclosed) informing me that it "has been decided that native gentlemen should not be permitted to compete for appointments in the General Medical Service." With this letter was enclosed a copy of one from Colonel Baker, dated, "India Office, 19th February," in which is the following passage: "The withdrawal of the privilege of competing for Indian medical appointments will no doubt cause disappointment to native medical students who were qualifying for such appointments, and Sir Charles Wood has impressed upon the Government of India the importance of endeavouring to provide suitable employment in India for such students."

The Director General was good enough to add, "should you wish to be employed in India, I would suggest that you apply direct to the Secretary of State for India."

To you, Sir, I now, therefore, most respectfully apply, not to remonstrate against the infliction of a disability, grievous and humiliating though it be on myself and my fellow countrymen, nor to urge my just complaint of the frustration of a cherished purpose, to attain which I have for years laboured in India and now made the journey to England; but, seeing that I gave up the emoluments of practice, and incurred the expense of my voyage on the faith of existing regulations, and with no reason to anticipate disappointment from retrospective enactments, I trust your sense of justice and of the faith due to engagements, will induce you to direct that I should receive pecuniary compensation for my expenses to England, and for my stay there, as well as for my passage home, and for the loss of the emoluments of private practice during my absence.

I have further to pray that you will be pleased to furnish me with such recommendation to the Government in India as may secure for me a public medical appointment in some degree commensurate with that which has now been placed beyond my reach.

Should it for this purpose be deemed expedient to subject me to an examination, absolute or competitive, I will most cheerfully subject myself thereto.

I have, &c.
(signed) *A. Solomon.*

The Right Honourable Sir Charles Wood,
Secretary of State for India.

No. 9.
Correspondence.

Mr. A. Solomon.

Sir, India Office, 21 March 1861.

I AM directed by the Secretary of State for India in Council to acknowledge the receipt of your letter, dated 13th instant, detailing the circumstances under which you came to England, for the purpose of competing for a commission in the Indian Medical Service, stating the disappointment to which you have been subjected in having been refused permission to compete for the Medical Department of the British army, and requesting that you may be furnished with such recommendation to the Government of India as may secure for you a public medical appointment in some degree commensurate with that which has now been placed beyond your reach.

Sir C. Wood regrets that the changes lately determined upon in the organization of the Indian armies have prevented the fulfilment of your just expectations to be allowed to compete for a commission in the Indian Medical Department.

He has instructed the Government of India to take into early consideration the subject of the provision of suitable professional employment for native medical gentlemen; and in consideration of the expenses which you have incurred in coming to this country, and in qualifying yourself for the competitive examination, he is prepared to grant you a sum of 100 *l.* on the production of a certificate from Sir J. R. Martin, examining physician, that you would have been qualified to compete at the examination for the Indian Medical Service under the old regulations, and to grant you 100 *l.* in addition as soon as you have taken your passage to return to India.

I am, &c.
(signed) *W. E. Baker*,
Colonel.

A. Solomon, Esq.

24, Mount-street, Grosvenor-square, 15 May 1861.

CERTIFIED that I have this day personally examined Mr. Alexander Solomon, as also the several documents relating to his medical studies and qualifications; and that Mr. Solomon would have been qualified to compete at the examination for the Medical Service of India, and under the old regulations.

(signed) *J. R. Martin.*

£. 100, passed 15 May 1861.
£. 100, passage-money, paid 16 May 1861.

— No. 10. —

CORRESPONDENCE relative to Mr. *J. A. Greene.*

No. 10.
Correspondence.

Mr. J. A. Greene.

Sir, India Office, S.W., 1 March 1861.

I AM directed by the Secretary of State for India in Council, to transmit for the information of the Secretary of State for War, the enclosed memorial addressed to Sir Charles Wood by Mr. James, A. Greene, late hospital steward in the Indian Medical Service, requesting to be permitted to compete for a commission at the examination for medical appointments, to be held in July next.

A copy of correspondence received from the Government of India, narrating the circumstances under which Mr. Greene left India in January 1860, without awaiting the announcement of the leave for one year, which had been granted to him, is also forwarded. It will be seen that on the 31st December 1859, Mr. Greene applied for furlough to England for two years, with a view to qualify himself as a candidate at the competitive examination for Her Majesty's Indian Medical Service, to be held in July 1861. The application obtained the favourable recommendation of the Director General, Medical Department, and on the 16th January 1860, a letter was addressed to Mr. Greene, to inform him that leave was granted to him for one year. Mr. Greene, however, had left Calcutta two days previously, and on the circumstances being reported to the Home Government, the Secretary of State for India informed the Government of India that Mr. Greene would not be admitted to compete for a commission in Her Majesty's Indian Medical Service, and that on his reporting himself at the India Office he would be

No. 10. Correspondence.

Mr. J. A. Greene.

be directed to return forthwith to his duty, and should he fail to do so within one year, he would be struck off the strength of the subordinate Medical Department.

In reply, the Government of India, under date 8th September last, observe, "We beg to remark in favour of this subordinate medical officer, that 12 months' leave without pay was considered to have been granted to him, and that but for a reference respecting the nature of the leave, which delayed its publication, it would have been notified in General Orders previous to his leaving India."

Mr. Greene states in his memorial, that fearing he would be dismissed for leaving India before his leave had received the sanction of the Government, he tendered his resignation of the service, and having subsequently been informed that he would not be admitted to compete for a commission, he now applies for a reconsideration of his case.

As there is no longer a separate examination for the Indian Medical Service, I am desired to transmit the application for the decision and orders of Lord Herbert.

I have, &c.
(signed) *W. E. Baker,*
Colonel.

The Under Secretary of State for War.

Sir, War Office, 12 March 1861.

I HAVE laid before the Secretary of State for War, Colonel Baker's letter of the 1st instant, together with its enclosures, in reference to the case of Mr. J. A. Greene, late hospital steward in the Indian Medical Service, who is desirous of being permitted to compete for a commission at the next examination for army medical appointments.

Enclosures returned.

In reply, I am to request that you will acquaint Sir Charles Wood, that it appears that Mr. Greene will in July next be nearly 28 years of age. He is, therefore, ineligible for an appointment to the Army Medical Service, as by the regulations the age of admission is limited to 26.

I have, &c.
(signed) *E. Lugard.*

The Under Secretary of State for India,
&c. &c. &c.

— No. 11. —

CORRESPONDENCE relative to Mr. *Lyons.*

No. 11. Correspondence.

Mr. Lyons.

(18,858—317.)

16, Portugal-street, Lincoln's-inn Fields.
30 March 1861.

Sir,

THE case of Dr. Thompson having thrown doubts upon the views of your office, as to the eligibility of the sons of European parents, born and educated in India, to the medical service of Her Majesty's forces, I shall feel obliged by your kindly informing me whether I shall be admitted, or not, to the next competition; for it would materially influence my prospects and proceedings.

I am the son of European parents, but born in India and educated there. Last year I came to England for the purpose of completing my medical education, with the object of entering the Indian Medical Service. I am at present preparing to qualify myself for the several diplomas requisite, and propose to present myself at the next competition, if deemed admissible.

I have, &c.
(signed) *W. Lyons.*

The Director General,
Army Medical Department.

No. 11.
Correspondence.

Mr. Lyons.

(18,858—317.)

Army Medical Department,
9 April 1861.

Sir,

In acknowledging the receipt of your letter of the 30th ultimo, I have the honour to inform you, that if both your parents were Europeans and British subjects, you will be eligible to attend the next competitive examination for appointments in the Medical Department of the army, provided you are then otherwise qualified.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

W. Lyons, Esq.,
16, Portugal-street, Lincoln's Inn.

(18,858—317 A.)

2, Dinton-villas, Merton-road, Tooting,
3 May 1861.

Sir,

I have the honour to acknowledge the receipt of your letter of the 9th April, in reply to my inquiry regarding my eligibility for Her Majesty's Army Medical Service. With reference to the statement in that letter, that my eligibility would entirely depend upon my being of pure European parentage, I beg to inform you, that I am on the paternal side only of pure European lineage, my mother being of mixed blood, the daughter, however, of a European.

I shall esteem it a favour if kindly informed whether, under these circumstances, I am debarred from entering Her Majesty's medical service.

I have, &c.
(signed) *W. Lyons.*

(18,858—317 A.)

Army Medical Department,
8 May 1861.

Sir,

In acknowledging the receipt of your letter of the 3rd instant, I regret to inform you that, under the circumstances therein mentioned, you are not eligible to attend the competitive examination for an appointment in the Medical Department of the army.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

W. Lyons, Esq.,
2 Dinton-villas, Merton-road, Tooting.

— No. 12. —

No 12.
Correspondence.

Dr. H. A. Kidd.

Correspondence relative to Dr. *H. A. Kidd.*

London, 37, Tavistock-street, Covent Garden,
16 May 1861.

Sir,

With due respect, I beg to solicit your attention to my very hard case, and hope it will meet with a favourable consideration.

I am the son of a warrant officer of the Honourable Company's service; of mixed parentage.

I entered the Honourable Company's subordinate medical service in 1847; served in Her Majesty's European regiments, and was, after due examination, promoted to assistant apothecary, receiving the warrant in November 1853. I studied in the Calcutta Medical College, and when qualified, in 1855, I was appointed apothecary to that institution.

In 1857, when the army medical service was open for competition, I tendered my resignation, with the view of coming to England and competing for the commissioned

missioned grade of the service. That, unfortunately, the Indian mutiny broke out, and I was obliged to join the army forming for the relief of Lucknow. My resignation was consequently returned, as the exigency of the service could not allow its acceptance. As proof of the above statements, I beg to append a few certificates.

I was attached to the army field hospital, and was present at all the engagements with Lord Clyde, for which I receive a medal and two clasps; viz. (Relief and Siege of Lucknow). After arduous and harassing duties in the field and camp for two years, I was finally permitted to resign my appointment when the army broke up. (*Vide* G. O. C. C., 19th March 1859.)

I worked my way to England, with the hope of being able to compete for the Army Medical Service. I arrived in September 1860, studied at King's College, and obtained the degree of Doctor of Medicine of St. Andrews, and a diploma from the Royal College of Surgeons of England. I have completed the regulations which would make me eligible, but, to my mortification, I find that my birth and parentage renders me unfit; and, though this be humiliating to the sons of British subjects who have toiled for the British Government, and are now deprived of serving in a grade to which, by education, they aspired, all I ask for is, that my labours be rewarded. I have served Government 12 years, and am still desirous of serving them. I beg that I may be recommended for some appointment in India, equivalent to the one now closed on me. In addition, I have undergone heavy expenses, and beg that the same indulgence may be extended to me, and the pecuniary compensation awarded, which will enable me to reach India, and obtain an appointment, in consideration of my past services, and the disappointment to which I have been subjected.

I have, &c.
(signed) *Henry Alexander Kidd,*
M.D. St. Andrews; M.R.C.S. England.

To the Right Hon. Sir C. Wood,
Secretary of State for India.

Sir, India Office, 25 May 1861.

I AM directed by the Secretary of State for India in Council to acknowledge the receipt of your letter, dated 16th instant, and to acquaint you, with reference to the requests therein contained, that, in consideration of the expenses you have incurred with the view of entering the Indian Medical Service, he will grant you 100 *l.* on the production of a certificate from Sir J. R. Martin, examining physician, that you would have been qualified by age, &c. to enter that service under the old regulations; and another 100 *l.* when you have engaged your passage to return to India.

I am, &c.
(signed) *W. E. Baker*, Colonel.

Mr. H. A. Kidd, M.D.

Sir, 24, Mount-street, 28 May 1861.

I HAVE the honour to report, for the information of the Secretary of State for India in Council, that I have this day carefully examined H. A. Kidd, Esq., M.D., and find that he is duly qualified by various diplomas, and that, by the old regulations of the service, he would have been entitled to enter on the competitive examination for admission into the medical service of India.

A certificate of birth he does not possess, but he declares, and he is ready to swear, that his age does not exceed 27 years and some days.

I have, &c.
(signed) *J. R. Martin.*

100 *l.*, passed 31 May 1861.
100 *l.*, passage, 11 June 1861.

To the Under Secretary of State for India,
India Office, London.

—No. 13.—

No. 13.
Correspondence.

Mr. R. Watts, M.B.

CORRESPONDENCE relative to Mr. *R. Watts*, M. B.

18, Hart Street, Bloomsbury Square,
17 May 1861.

Sir,

I BEG leave most respectfully to solicit your attention to the following representations.

I am a native of India, and a natural born subject of Her Majesty. I studied at the Bengal Medical College for a period of four years and obtained several honours. It was the prospect of competing for an assistant surgeoncy in the Indian army that incited me to labour indefatigably, and to make many sacrifices, that induced me to quit my native shore and to prosecute my studies with still greater zeal.

On my arrival in London, I entered University College, and after two years study, I obtained the degree of Bachelor of Medicine at the University of London. Besides this, I possess the diploma of Member of the Royal College of Surgeons. I need not narrate to you the numerous difficulties I had to contend with, and the expenses I have incurred to possess these qualifications which would render me eligible to the competitive examination for the appointment of assistant surgeon in Her Majesty's Indian army.

It is indeed very mortifying to me to find, that when I have just made myself qualified to compete for the above appointment, to be considered ineligible on account of my parents not being Europeans.

I now, Sir, appeal to your sense of justice. I do not for a moment remonstrate against the Government for excluding all East Indians from the commissioned grade of Her Majesty's army, I merely ask for an adequate return for the immense expenses I have incurred, to enable me to seek employment in India, and I hope that the compensation granted by Government may not be denied me.

I have, &c.

To the Right Hon. Sir C. Wood,
Secretary of State for India,
India Office.

(signed) *R. Watts*, M.B., London.

R Watts.

Sir,

India Office, 25 May 1861.

I AM directed by the Secretary of State for India in Council, to acknowledge the receipt of your letter dated the 17th instant; and to acquaint you, in reply, that instructions have been sent to the Government of India to take into their early consideration, the subject of opening suitable medical appointments to the native gentlemen of India; and that in consideration of the expense you have incurred with the view of entering the Indian Medical Service, Sir C. Wood will grant you 100 *l.* on the production of a certificate from Sir J. R. Martin, examining physician, that you would have been qualified, under the old regulations, to enter that service, and another 100 *l.* as soon as you have engaged your passage to return to India.

It will also be necessary that you should furnish a certificate from the Army Medical Department, stating that you are ineligible for Her Majesty's medical service.

I am, &c.

R. Watts, Esq. M.B.

(signed) *W. E. Baker*, Colonel.

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24 Mount Street, 30 May 1861.

CERTIFIED that I have this day carefully examined the diplomas and other documents presented by Robert Watts, Esq., M.B., and find that, under the old regulations, he would have been qualified to enter the medical department of India.

(signed) *J. R. Martin.*

100 *l.*, passed 4 June 1861.
100 *l.*, passage 11 June 1861.

(1895-8—340 A.)

No. 13.
Correspondence.

Mr. R. Watts, M.B.

Army Medical Department,
3 June 1861.

Sir,

In acknowledging the receipt of your letter of the 27th ultimo, I regret to inform you that under the circumstances therein mentioned, you are ineligible for a commission in the Medical Department of the army.

I have, &c.

Robert Watts Esq., M.B. (signed) *J. Gibson*, Director General.

— No. 14. —

No. 14.
Correspondence.

Mr. G. F. Hoff.

CORRESPONDENCE relative to Mr. *G. F. Hoff.*

5, Norfolk-street, Strand,
30 May 1861.

Sir,

I TAKE the liberty of presenting the following petition for your perusal and kind consideration.

I am an East Indian by birth, the son of an old servant of the late Honourable East India Company, the enclosed list of testimonials showing my father's services.

I have studied medicine for four years at the Calcutta Medical College, and passed the first examination of that college, it having been my intention at that time to have graduated and taken Government employ out in India, but the Indian Medical Service having been thrown open to competition, and several of my countrymen being successful in getting into the service, I was likewise induced to come to this country for the same purpose, with the view of bettering myself; and accordingly left the Calcutta College and came to England. On my arrival I was informed by the Secretary of the Royal College of Surgeons, London, that I needed a further attendance at some recognised college and hospital before I could be permitted to pass for my degree, without which I was not eligible to compete for a commission. I accordingly left London and proceeded to Edinburgh, where I have been attending the University and Royal Infirmary for the last two years; and now, when I have just completed all that was necessary, and am ready to go up for my degree, I find that, owing to certain new rules, all those whose parents are not purely Europeans are ineligible to compete for army appointments; this has placed me in a very awkward predicament, as the little money which I possessed, and which would have just enabled me to have accomplished the object of my visit to England, is very nearly all expended in living, paying for classes, hospital practice, &c. &c., and my father has not the means to assist me, his income being very small; further having a large family to support.

My chief object in petitioning you is, not that I have any cause of finding fault with the new Government rules, prohibiting Indians from entering the army, but merely that my hard case may receive some consideration from the Government; begging your kind support at the same time, so that I may receive some remuneration to make up for the great disappointment I have met with, and the heavy expenses I have been put to, just to enable me to finish and return back to India without further delay.

Major General James Ramsay (late Commissary General in India), and the only friend I have in London, if referred to, can certify to the above statement.

Hoping you will view my peculiarly hard case favourably,

I have, &c.

To the Secretary of State for India, &c. &c. &c. (signed) *George F. Hoff.*

Sir,

India Office, 7 June 1861.

I AM directed by the Secretary of State for India in Council, to acknowledge the receipt of your letter dated 30th ultimo, and to acquaint you, with reference to the requests therein contained, that in consideration of the expensesyou have incurred with a view of entering the Indian Medical Service, Sir C. Wood

No. 14. Correspondence. Mr. G. F. Hoff.

will grant you 100 *l.* on the production of a certificate from Sir J. R. Martin, examining physician, that you would have been qualified to enter that service under the old regulations, and another 100 *l.* when you have engaged your passage to return to India.

It will also be necessary that you should obtain a certificate from the Army Medical Department, that you are ineligible for Her Majesty's service.

The testimonials enclosed in your letter are herewith returned.

I am, &c.

G. F. Hoff, Esq. (signed) *W. E. Baker,* Colonel.

— No. 15. —

No. 15. Report of Medical Officers.

Copy of the Report of Medical Officers appointed to examine the State of Health of British Subjects born in India, Applicants to be allowed to compete for Employment in Her Majesty's Military Medical Service.

16 February 1861.

NAME.	REMARKS.
Senjee Pulney Andy, M. D. - -	- Fit.
Daniel Robert Thompson - -	- Fit.
Henry Goodall - - - -	- Fit.

These gentlemen were passed with a view to their serving in India.

(signed) *Thos. Geo. Fitzgerald,*
Staff Surgeon.
Wm. A. White, M. D.,
Staff Assistant Surgeon.

Army Medical Department.

— No. 16. —

No. 16. Report of Medical Officers.

Copy of Report of Medical Board appointed to re-examine the several Applicants.

In compliance with instructions contained in War Office letter, dated 2d March 1861, that Sir Ronald Martin, Sir John Liddell, Director General, Naval Medical Department, and Dr. Gibson, Director General Army Medical Department, should report their joint opinion as to whether certain gentlemen of colour were physically qualified to stand the exposure to the various climates in which they would be called upon to serve were they admitted into the medical department of Her Majesty's army,

We have to report, that it is our deliberate opinion, founded on experience, that the native and mixed races of India and other tropical countries will never be able to sustain for any length of time the climate of our northern regions; and that they can only be employed advantageously to the public service in climates similar to those in which their race exists.

We carefully examined Messrs. Goodall and Thompson, men of colour with Asiatic features; and although we could not discover any marked bodily defect that would exclude them from employment in a tropical climate, still they are constitutionally unfit for service in the various northern climates in which the British army is called upon to serve.

(signed) *J. R. Martin.*
J. Liddell,
Director General, Royal Navy.
J. B. Gibson,
Director General, Army Medical Department.

Army Medical Department,
12 March 1861.

EAST INDIA
(ARMY MEDICAL DEPARTMENT).

COPIES of APPLICATIONS addressed by BRITISH SUBJECTS born in *India* to the Secretary of State for India and to the Secretary of State for War, for permission to be allowed to compete at Public Examinations for Employment in HER MAJESTY'S MILITARY MEDICAL SERVICE; of REPLIES to such Applications, and CORRESPONDENCE consequent thereon, &c. (in continuation of Parliamentary Paper, No. 199, of the present Session).

(*Colonel Sykes.*)

Ordered, by The House of Commons, *to be Printed,*
25 *June* 1861.

[*Price 7 d.*]

REPORT

OF THE

SANITARY COMMISSION FOR BOMBAY,

FOR THE YEAR 1865.

THE most important sanitary measure that was adopted during the year, was relieving the soldiers from overcrowding in their barracks. Early in the year the Government of India ordered that temporary accommodation should be provided, "whatever the cost may be," to make up to each man the full standard floor superficies of 90 feet. It was ordered that all rooms occupied as libraries, canteens, or for other auxiliary purposes, and which could be made available to supply deficiencies in barrack space, should be appropriated to this use, whatever the inconvenience might be, as it seemed essential that the sleeping rooms of the men should not be overcrowded.

It was found that in this Presidency, after the misappropriated barrack-rooms had been restored to their original use as dormitories, there still was only a floor superficies of 78 feet for each unmarried man of the actual present strength of the army, and that there remained 1,389 single men for whom barracks had to be provided.

Tents as dormitories.

As the erection of the temporary buildings would necessarily occupy some time, tents were pitched as dormitories at some stations where the ground was not unfavourable, but it was enjoined that they should not be used for that purpose where the soil was damp, lest more injury should be done to health than would accrue from a little longer continuance of the former degree of overcrowding.

With a view to prevent the excessive occupation of barrack-rooms and hurtful irregularity in the distribution of the men, it was ordered that on each room there should be inscribed the number of men it could legitimately contain.

Plans of permanent barracks.

Much was done in the preparation and inspection of plans and estimates for increasing and improving the permanent accommodation of the troops, and standard plans of guard-rooms and many other subsidiary buildings were issued by Government for the guidance of the executive officers in the Department of Public Works.

Plans for Hospitals.

The subject of hospital construction was under consideration, and plans were prepared by Lieutenant Colonel Crommelin, which, with some modifications, that were approved of by the Government of Bombay, have been adopted for guidance, pending the decision of the authority in England. These plans allow the liberal floor superficies of 130 feet in the dormitories, and afford separate day rooms.

Temporary hospital accommodation.

It was ordered that temporary buildings should be raised to complete at once the hospital accommodation to 12 per cent. of strength where it fell short of that, and at the rate of 100 square feet a cot, which in the present exigency was to be considered enough.

Ventilation of barracks.

Measures for the ventilation and the cooling of barracks were under consideration, and Government called for reports on schemes that had been suggested to it by persons not in India. Punkahs and watered tuttee were sanctioned for barracks, family quarters, and hospitals, at several inland stations where they had not before been used.

Means of recreation.

The sanction of the Secretary of State was given to a large extension of the means of recreation to the soldiers. (*See* Appendix.)

Encroachments in bazars.

The evils resulting from irregular occupancy in military bazars and lines, and from buildings being allowed to encroach on the ground that originally intervened between the barracks and the bazar, were under the consideration of Government. It was also seen to be objectionable that a bazar should intervene between the barracks and any near neighbouring village or town, because the neutral interval that should be maintained between them was thus in some measure bridged over, and the isolation of the barracks being lost, the inhabitants of the cantonment and the troops were exposed to the risk of participation in any epidemic sickness that there might be among the population of the town.

Orders were issued to prevent the repetition of such irregularities, and to resume, as opportunity offered, the ground that had been improperly built on. In several instances, bazars, that were in noxious proximity to barracks, were removed at the expense to Government of compensation to the owners of the houses.

Disposal of sewage.

The abolition of cess-pits was kept in view. Those that were found still existing in connection with the latrines of European corps were at once suppressed, as with the daily cleansing of the latrines that had for years been established, the use of dry earth as an absorbent, even without any special apparatus, was all that was required on account of the liquid excreta that the imperfect construction of the privies allowed to be offensive.

It was thought that a modification of Macfarlane's troughs would be best suited for natives, and some of these were applied for and are expected from England for trial.

It is intended to substitute a tank-cart for the old cook-house masonry cess-pit. The waste water of the lavatories and bath-rooms, it is hoped, will in many cases be utilised in gardens; but where this cannot be effected, it is proposed to conduct it to a distance by pipe.

Gardens near barracks.

It was aknowledged that it would be well that there should be no gardens near to barracks, but as they afforded amusement and occupation when close at hand, which the soldier would not seek from them were they at a distance, they were tolerated; but Government ruled that a hard dry surface should be reserved between the garden plots and the barracks or family quarters.

Contour plans of cantonments.

Measures for obtaining contour plans of military cantonments were under the consideration of Government, and the survey, with this object, of one station was ordered.

Analysis of waters.

The chemical examination of the drinking water used by the troops was continued. A minute quantitative analysis was made of 15 samples from six different stations; and 22 samples from other sources were subjected to the summary analysis, which has been mentioned on former occasions, and from which is learnt the total amount of solid impurities, and the proportion in which recent organic matter is present in water. All the analyses were made by an expert chemist, who is now the official analyser to Government. The waters from the wells of the Dukhun stations contained only from 0·14 to 0·98 grains of recent organic matter in a gallon. The entire solid impurities, however, were great, as might have been expected from the wells being sunk in rock, which, although igneous, contained minerals that did not offer much resistance to the action of water. The rock is dolerite, and many of its beds are amygdaloidal. The mineral impurities in the water, drawn when they were at their maximum, varied in different wells from 20·04 to 29·90 grains; soda, lime, and magnesia were the chief bases, and silica was abundant.

At Kurachee, the organic impurity did not exceed 0·66 grains in the gallon, but the saline impurities in the wells which supplied the troops were from 47 to 61 grains, and consisted chiefly of chloride of sodium.

The water from a well in the granite rock at Aboo, in a total of 10·64 grains of solid impurities, contained 0·59 of organic matter.

Water supply.

The wells in the sandy soil of Deesa gave water that contained from 1·44 to 2·34 grains of organic impurities, besides from 2·80 to 3·26 grains of nitrates, the total solid impurities ranging from 24·86 to 36·75 grains in a gallon. This result was not unexpected, as the wells were near habitations. In the alluvial soil

soil at Baroda, the wells, which there also are near habitations, gave water that yielded unsatisfactory results.

Government ordered the circulation of a memorandum to guide officers of the Public Works Department as to the distance that should be maintained between wells for drinking water and habitations.

A comprehensive scheme, to afford an abundant supply of water to the town and cantonment of Poona and the cantonment of Kirkee, was under the consideration of Government. In connection with this, a report on the present state of the water supply was called for. (Appendix.)

Bedding in barracks and hospitals.

The bedding of soldiers in barracks and in hospital was the subject of report, and it is still under the consideration of the Government of India. There appeared to be good reason for continuing the felt mattress in barracks, and for adopting *coir* (cocoanut fibre) as the material for filling hospital beds in cantonment.

Vegetables for European troops.

There were some stations of the army at which the troops had often suffered from scurvy, owing to the deficiency of fresh vegetables. The Rajpootana stations were of the number, but at Aden the disease had been most constant and most severe, especially among the native troops and followers. Efforts were made to ensure a better supply of wholesome vegetables to the European soldiers.

Rations for Native troops.

Government ordered to the native troops at Aden, as a part of their rations, the issue of Kokum, an acid condiment, along with currystuff. The grain-eating inhabitants of India and the neighbouring countries habitually use an acid condiment as an ingredient of their diet, but it had not hitherto been supplied either to troops in the field, or at stations where they obtained their food from the Commissariat. Kokum is much used in Bombay and in the neighbouring districts. It is the dried fleshy part of the fruit of the *garcinia purpurea*, and its acidity is due to malic acid, which is isomeric with citric acid, and like it has antiscorbutic virtue. The chemical analyser to Government, in communicating the result of his examination of a sample of the substance submitted to him, stated that the air-dried fruit contained 17·26 per cent. of vegetable acid, that the chief cause of the acidity was malic acid, and although there was also some tartaric acid, the quantity of it was small.

Kneading machines.

The use of kneading machines in the bakeries supplying the troops with bread, were being brought into general use. The number of stations to which they had been distributed amounted to 18.

Transports for native troops.

The return of native troops from China in overcrowded vessels rendered it necessary to revise the rules regarding accommodation in transports. The space that was in future to be given to native troops and followers was determined.

Accommodation for officers.

The condition of the houses which European officers serving with regiments had to occupy, was the subject of inquiry and report. The result of the investigation showed that the officers were, comparatively, worse provided with accommodation than the non-commissioned officers and men now were under the new regulations as to quarters. The house property in cantonments had come into the possession of native owners, who charged exorbitant rents, and failed to maintain the dwellings in good repair and in a wholesome condition. The resumption of the ground on which officers' quarters stood, was, with a view to providing better buildings, under the consideration of Government, and it was ordered that in the meanwhile quarters on approved plans should be provided at Colaba and Bombay.

Cantonment death returns.

Before the close of the year a monthly return was received from each cantonment, showing the deaths of the population not embraced in the returns rendered by medical officers. As the period during which those cantonment returns were furnished in proper form was but short, no useful result could as yet be drawn from them.

Marching of troops.

The great loss of life that was caused by the prevalence of cholera, drew particular attention to the means of lessening its ravages, and, among other measures, the regulations which restricted the marching of troops in some districts to certain seasons, but which of late years had in practice been relaxed, were rendered more stringent.

Disinfection of tents and clothing.

Orders were issued by Government as to the disposal or the disinfection of clothing and tents that had been used by those suffering from cholera.

Biers for funerals.

With a view to obviate the risk of infection to which men might be exposed by carrying the coffin of a comrade or other person, on their shoulders to the grave, it was directed that biers should be used by the carrying party at all military funerals.

Diffusion of cholera by pilgrims.

The danger of the diffusion of cholera by pilgrims and by persons frequenting fairs continued to have the attention of Government, and arrangements were made to prevent, if possible, the outbreak of the disease during the concourse, and to lessen the risks of its being disseminated by the pilgrims on their dispersion. Several of the places of pilgrimage were inspected and reported on. (Appendix.)

Inspection of places of pilgrimage.

Condition of towns.

The health of the civil population generally was the subject of much solicitude. Reports on the condition of several large towns were received by Government (Appendix), and the exertions of magistrates were directed to the improvement of the state of the towns and villages in their several collectorates, and, among other things, to suppress the domiciliary interment of infants, and as far as practicable all intramural burials.

Domiciliary and intramural burial.

Laying out new villages.

Government ordered the circulation of a memorandum on the principles that should be observed in laying out new villages at railway stations or elsewhere.

Registration civil population.

The registration of the deaths among the civil population, which was begun in 1864, was carried out in nearly all the districts that are in British territory, and arrangements were made that it should be yet more complete in the following year. The population returns were prepared in 1851, and it is presumed that the movement of the population in some parts of this Presidency have been so considerable, as to render the census of that year but little applicable to present circumstances in those districts.

Mortality in civil population.

In the 12 collectorates from which returns were received for the whole year, the deaths from all causes were in the ratio of 20 in a thousand of the population as given in the census of 1851. Exclusive of deaths from cholera, the ratio of mortality was 17·4, of which 0·5 in a thousand was attributed to small-pox.

Epidemics in goals.

The condition of prisoners in gaols called for amelioration, and the occurrence of severe and fatal sickness in some of the prisons required that rules should be made for the guidance of those in charge, on occasions of the outbreak of epidemic disease. Such rules were prepared.

Floor area for prisoners.

Standard plans for gaol buildings were issued, and the allowance of room for each prisoner was laid down. The Government of India ruled that in an associated ward, a floor superficies of 40 feet was considered by it to be enough for a prisoner.

Mortality in gaols.

From the returns, it is found that in the permanent gaols, in an average population of 6,044, the mortality was 72·4 in a thousand; but high as this ratio is there is reason to believe that it would have been considerably higher if it had not been the practice, under certain conditions, to liberate prisoners who appeared to be dying, and to whom removal from the gaol appeared to afford the only means of prolonging life. In future returns such liberations will be distinctly enumerated. The ratio of mortality varied from 13·2 at Dharwar to 265·4 at Ahmedabad, where, besides cholera, a fatal fever was epidemic. At Hyderabad also there was excessive mortality, amounting to 256·8 per mille, and attributed mostly to diarrhœa and dysentery, fever and cholera. There were in all 10 deaths from scurvy, of which five were in the Dhoolia gaol, two at Tanna, two at Hyderabad, and one at Aden. The mortality in subsidiary gaols, gangs, and lock-ups was 51·2.

Increase of municipal corporations.

A considerable addition was made to the number of towns that have adopted Act XXVI. of 1850, to enable them to make improvements connected with public health and convenience, and at the close of the year their number amounted to between 140 and 150.

Municipal administration in the city of Bombay.

A new Municipal Act was obtained for the City of Bombay, and now a vigorous administration, comprising a Health Department, is doing much good.

Drainage

Drainage works are begun, and increase to the water supply is contemplated; gas is used in lighting the streets.

Mortality in the city of Bombay.

The death returns of 1864 have now been published; when taken in connection with the census of that year, they show the mortality to have been 30 per mille. The deaths in 1865, as announced in the weekly Government Gazette, were in the higher ratio of 35 per mille. An adynamic fever was unusually prevalent.

Mortality in emigrant vessels.

The very great mortality that had occurred on board vessels carrying native labourers to Mauritius, led to the suspension of emigration from Bombay until investigation should be made as to the cause of the sickness. Government, on receiving a report on the subject, ordered such changes in housing the intending emigrants, and in the arrangements for their welfare on board ship, as seemed to be necessary before the suspension was removed.

EUROPEAN TROOPS.

Increase and decrease.

At the beginning of the year the British troops amounted to 12,897. In the course of the succeeding 12 months 2,897 were received by drafts or transfers from England or the colonies. On the other hand, 1,456 returned to England on duty, and 750 left on expiry of their time of service, or obtained their discharge by purchase; 365 were invalided, and according to the statement furnished by the Adjutant General of the Army, there were 427 deaths, 403 of them being among those called by him effectives, and 24 among the unattached. The number of deaths found in the Medical Returns, which embrace the effectives only, of the Adjutant General's Return, differs from this very considerably. There were various transfers to and from other presidencies, and 672 volunteers were left by three infantry regiments that were returning to England. The actual present strength of the army was 12,624 at the close, or 273 less than it had been at the beginning of the year. The unattached that were included in the strength amounted to 356, and the effectives to 12,268, or three and a half per cent. below the establishment. (Table I.)

Proportion of married men.

From a return dated 1st May 1865, it is found that only 7·4 per cent. of the privates of all arms were married. In the artillery there were 9·8, in the infantry 7·0, but in the cavalry the ratio was so low as 4·7 per cent. (Table II.)

Sickness and mortality.

The mortality in 1865 was greater than it had been for many years. The deaths in hospital were 402, and those out of hospital 16, giving together a mortality of 35·1 per mille of strength, or considerably more than double what it had been in 1864. The deaths among invalids embarked for England are not included in the number now given, and they could not be ascertained until after the lapse of several months. It may be noticed, that while the deaths after embarkation have latterly been added, as they ought to be, to the mortality of the Indian army, the strength of the invalids up to the time when the deaths among them ceased to be noted, has not been in like manner carried to account.

Epidemic cholera.

A wide-spread and severe prevalence of cholera was the chief cause of the increased mortality, but an unusually high temperature was thought to contribute much to the severity of the sickness of the year.

The excess of mortality being chiefly caused by a disease that ran a rapid course, there was not a concurrent large sick list. The daily sick in hospital were but 56·4 to a thousand of strength, or less than they had been in the preceding year. The ratio of admissions in 1865 was a little greater than it had been in 1864. (Table III.)

In comparing the numbers in 1865 under the several classes of disease with those recorded in the previous year, it is found that in each class there was an increase of mortality. In zymotic disease, the ratio in 1865 was 22·7 against 6·4 of strength in 1864. In cachectic disease it was 2·6 against 1·5. In local disease the excess was not so great, the ratio being 6·6 contrasted with 6·0. In developmental disease the mortality was but small. In violent deaths the ratio in last year was 2·9 against 1·9 in 1864. (Table IV.)

The admissions for miasmatic diseases were 802 in a thousand of strength,

and the deaths resulting from them were in the ratio of 21·9 or they were 624 per mille of the total deaths. For entnetic diseases the admissions were 201·8 in a thousand, or one-fifth of the whole; the deaths were two in number, or less than one in 5,000 of strength. In the other orders, the death rate was, in diseases of the digestive organs 3·0; accident or violence 2·3; diseases of the nervous system 1·4; of the respiratory 1·1; diseases of the circulating system 0·7; dietic diseases 0·6; suicide 0·4 per mille. In the remainder the ratios were still lower. (Table V.)

The European portion of the army lost 16 men in every thousand from cholera alone, the deaths from that cause being 457 per mille of all deaths. Fever caused the deaths of 3·1 in every thousand, and hepatic disease of 2·2; dysentery and diarrhœa of 2·4; and through phthisis pulmonalis the loss of life was 1·5 per mille. (Table VI.)

The cholera mortality was most severe at the stations of the Mhow Division, where 25·4 in a thousand died, or if the loss in a detachment which was marching be included, the mortality in the division was 31·3. The marching of that detachment in the middle of April was taken notice of by Government. Forty-six of the cholera deaths in the Mhow Division were in the wing of a regiment at Neemuch, and the same wing lost six men from fever, and in the great heat in May four died of sun-stroke. The mortality in this detachment amounting to 14½ per cent. of strength in a year, was the subject of a special report.

The head-quarter wing of the same regiment, which had lately arrived from England, lost 11 men in Bombay from cholera and from fever.

The Belgaum Brigade alone was exempt from loss by cholera.

Intemperance.

There were six deaths attributed to delirium tremens. A hundred and ninety-one were admitted for ebriositas, but no death is attributed to that cause in the returns. There is reason however to believe, that excessive drinking was the cause of more loss of life than is shown in the returns. One of the medical officers who reported on the sanitary condition of stations, writes of the relation that the intense heat had to *insolatio*:—"In one case only of the six treated did it (the heat) appear to be the sole cause. In all the other cases intemperance predisposed to the disease. Of six attacked, three were serjeants, who, from the steady manner in which they invariably performed their duties, were considered men of temperate and regular habits, and they will be shown as such in the temperate and intemperate return called for."

The tables of sickness and mortality at the several stations of the army are prepared from the weekly reports, and embrace the fifty-two weeks from 31st December 1864 to 29th December 1865. (Tables VII. to XVI.)

Yearly reports from stations.

In conformity with the instructions from Her Majesty's Secretary of State for India, the senior medical officers of the different stations of the army were required to furnish reports on the sanitary state of the European and native troops during the year, and of the various measures carried out, or determined on, for the improvement of their condition. A short and concise summary of the information that has been received in response to those calls, and from other sources, is now given.

POONA DIVISION.

Poona.—Owing to an additional regiment having been brought to the station, the deficiency of barrack accommodation was more felt than it would otherwise have been. Partly owing to that circumstance, and partly to the enforcement of the order giving 90 superficial feet of floor to each man in the barrack-room, many had to sleep in tents. It has been determined to erect new barracks at Kirkee for an European infantry regiment, and to give the Gorporee barracks to the general depôt, instead of the condemned barracks it now occupies.

Temporary barracks for 564 men were sanctioned, and were begun to be erected with a view to relieve the overcrowding.

Plans and estimates for carrying out the recommendations made in the reports of 1864 on the several barracks and their subsidiary buildings, were in course of preparation at the close of the year.

New married men's quarters for the sappers and miners, and for the general depôt were completed, excepting their out offices, and were occupied. Roof ventilators were given to the married men's quarters of the infantry regiments.

The

The ablution accommodation of the old depôt barracks was a little improved, and an ablution room was made at the Artillery Hospital, Wanowree.

A steam mill was added to the bread and biscuit bakery. The accumulated silt of the tank near St. Mary's Church was removed.

When the wells failed in the hot season, water was brought by iron pipes from the Moola Moola river to supply the wants of the bazar population and native troops. A summary analysis of this water was made at intervals of a month, as a precautionary measure, but its quality was found not to have deteriorated at the close of the season.

A contour survey of the cantonment and its immediate neighbourhood was ordered.

The health of the station compared with that of the army generally was good. The sick in hospital were but 47·2 per mille of strength, and the deaths, exclusive of cholera, but 11·6 in a thousand; from all causes they were 18·7.

Kirkee.—Plans and estimates were being prepared, and some were already sanctioned, for carrying out the recommendations in the Inspection Report of 1864.

New family quarters were in progress. Another new barrack was occupied. Various improvements were made in the lavatories. The riding school building was converted into a gymnasium.

The deficiency of good water is always greater at Kirkee than at Poona, and the European troops had to be supplied from the Moola river. The water was in this case also analysed monthly. From March to June the organic matter in a gallon varied from 1·83 grain in the first month to 1·46 in the last, and the total solid impurities from 10·57 the maximum to 6·65 grains, which was their amount in the middle of June.

There were comparatively more admissions into hospital than in the neighbouring cantonment of Poona, and more were constantly sick; these were at the rate of 65 in a thousand. The deaths were in the proportion of only 10·6 from all causes, and were those from cholera deducted, they were only 1·8 per mille of strength.

Satara.—In order to accommodate the detachment at the increased rate of floor superfices now allowed, a temporary barrack was being built. New lavatories and bath-rooms and a plunge-bath were under construction. Quarters for 24 families were completed, and a dead-house was added to the hospital.

There was only one admission for cholera, and it did not prove fatal. The mortality from all causes was 13·6 per mille of strength, of which 4·5 resulted from fever, and the same ratio was from hepatic disease.

Sholapoor.—A separate report on this station is given in the Appendix. A field battery occupied the barracks. The overcrowding in the single men's rooms was partially relieved by some of them occupying vacant married men's quarters. The bad ventilation of these quarters was much complained of.

There were 181 admissions from a strength of 108, and there were three deaths, of which two were from fever. There was one admitted for cholera, but he recovered.

Ahmednugur.—This Sanitary Commission reported fully on this cantonment (*see* Appendix). The recommendations were being acted on. Some of them had been fully carried out, such as the abolishing of all cesspools near privies, and the using of dry earth; depositing the stable litter and refuse south of the cantonment, instead of as before at the north-west and north of the lines; enlarging the cavalry library, and ventilating the latrines. The barrack-rooms were being paved. The cleansing of the neighbouring village of Bhingar was being attended to. (Appendix.)

The artillery had a female hospital under construction, with its matron's quarters. The old temporary hospital was converted into dispensary, office, and store-rooms, and an hospital for native followers. The soldiers' hospital was being improved by removing the offices from its back verandah and opening windows and doorways on that side. A new latrine had been built. A block of servants' houses which interfered with ventilation had been removed.

New artillery barracks were sanctioned, also married men's quarters, and a quarter guard. The drinking water was brought by conduit from the hills

four or five miles distant; it was of good quality. Another conduit, now ruinous, was being restored to increase the supply to the European troops.

There was a severe visitation of cholera in May, and 15 died out of 39 attacked. The disease was checked when the men were moved out of the cantonment. Cholera had been present in the bazar for some time before the European troops were attacked by it. During the year the number of daily sick was 12 per mille. The deaths were in the ratio of 33·3 from all causes, or, if cholera is excluded, they were from all other causes only 7·0 of the strength.

Aseerghur.—During the cleaning of a tank, which had in part silted up and become offensive, the detachment of British troops was kept at Khandala. The medical officer in charge of the station enumerates many deficiencies in the buildings and the fortress, and recommends improvements in the ventilation of the barracks, hospital, canteen, and cook-room, improvements in the ablution rooms and their drainage, and in the guard-room and lock-up. The need for a new burial-ground had before been under consideration.

A small temporary recreation room was built, and the men had latterly a theatre; their reading-room was a barrack verandah. A fives court was being built.

Out of an average yearly strength of 122 there were three deaths, one of which was from cholera.

MHOW DIVISION.

Mhow.—The surface drainage of the station was deficient; this was in part remedied by draining the low flat ground north of the church and near the cavalry barracks in the monsoon. The complete drainage of the north-east part of the cantonment was in progress, and the drainage of the south-east part was determined on.

For the artillery, the guard-room was improved by the addition of a verandah, and the detention-room and the cells were enlarged, and all were paved; both rooms, as well as the temporary barracks and the hospital wards, got additional windows. Four blocks of quarters, each for 10 families, were in progress. Ablution rooms were being improved. The huts of the native followers were being replaced by new ones. A new hospital was to be built.

For the cavalry, the ground beside the barracks was levelled, the water-course near the riding-school was improved, and pits near the hospital were being filled up. Other pits near the stables were also to be filled. A new hospital and saddle-rooms were determined on.

For the infantry, new guard-rooms for the hospital and the fort were provided. A new hospital was nearly completed, and a new quarter-guard with cells. The barrack roofs of the cavalry and infantry were to be ceiled, and verandahs were to be given as a shelter from the heat of the sun, and the roofs were to have ventilators. Additional staircases were to be made to give readier access to the out-offices. Private bathing-rooms were to be added to the ablution rooms. Punkahs for all the barracks and hospitals were sanctioned.

The admissions into the hospitals of the station were 1879·6 per mille, and the deaths 18·1, of which 6·0 were for cholera. The fever admissions had the high ratio of 940·5, and the mortality from that disease was 2·3 of strength, and from dysentery it was the same.

Although a detachment of British troops suffered much from cholera in April, within two or three marches from Mhow, and deaths from that disease occurred among natives in the cantonment in that month, yet the European troops at the station had exemption from it until June and July.

Indore.—The ground near the barracks was not sufficiently drained. There were cess-pits that were said to be offensive. To improve the ventilation of the barrack-room, it was recommended that the closed top venetians of the doors should be made to open. The improvement of the cook-room ventilation was ordered. There was no dead-house to the hospital.

In the detachment, with its average strength of 113, the number daily sick was only 3·2. There was one death during the year. The solitary case of cholera that was admitted recovered.

Neemuch.—

Neemuch.—The sanitary condition of this station has recently been noticed in a special report on the severe sickness in a wing of Her Majesty's 45th Regiment. The infantry barracks which it occupied were constructed at the time of the mutiny for temporary occupation, and, it is said, with a view to leave the best site free for the permanent buildings, they were placed on the leeward slope of a ridge. Much labour had been expended in trenching and draining the low-lying black soil at the bottom of the hollow, but, it is said, without much benefit. There was difference of opinion as to the permanent occupation of the station with European troops, and during the several years of uncertainty much sickness was endured by the infantry corps. During last year it was decided that Neemuch should continue to be garrisoned by a battery of artillery and a wing of European infantry, and it was determined to build new barracks on a better site.

There was but little done for the improvement of either the artillery or infantry lines during the year. For the artillery, the staff serjeants' quarters were improved, and a privy with a covered passage was constructed for the hospital.

There was some alteration made in the drainage of the infantry family quarters.

The wing of infantry suffered most in the great sickness at this station. The European troops had a mean strength of 465. The admissions were in the ratio of 2,355 per mille, but the daily sick were not in greater ratio than 69. The mortality from all causes was 159·1, of which 105·3 per mille was from cholera, 15·0 from fever, and 6·5 from hepatic disease. Sun-stroke during the unusually great heat of the weather added largely to the mortality. The infantry moved into tents twice to escape from the epidemic, but without immediate benefit. The second occasion of their doing so was at the close of the rains, when febrific miasm was most powerful, and it is probable that the fever from which the men suffered was aggravated in severity by their sleeping in tents, although all had cots.

Nuserabad.—The supply of good water was scanty, and was brought from a well a mile and a half or two miles distant from the barracks. The artillery lines were deficient in properly built canteen and serjeants' mess. The schoolroom, library, and also the staff serjeants' and married men's quarters were bad and very hot. There was no isolation ward nor a female ward to the hospital; its dispensary was enlarged and a guard-house was built.

For the infantry, 16 of the proposed quarter company ground-floor barracks, for nine companies, were completed. The continuous raised roof ventilator had not sufficient overlap to keep out rain; this was being remedied. The future barracks will be with upper floors. The cookhouse was smoky; it was attempted to remedy this. The married men's quarters were low roofed and very hot; they were deficient in privy accommodation. The guard house was too small and dark, and was insufficiently ventilated. The cells were being enlarged and ventilated.

The hospital was said to be over-ventilated with square openings in the walls near the floor, and to be too dark.

Punkahs for all barracks, hospitals, and family quarters were sanctioned.

The average strength was 693, and the number constantly in hospital was in the millesimal ratio of 42. The mortality from all causes was 30·3, and if the 13 deaths from cholera were omitted, the mortality would be only 11·5, of which 4·3 were owing to fever. Cholera appeared twice at the station—first in June, and afterwards in October, and it affected chiefly the European troops. They were moved into tents to escape from the disease, and with success.

NORTHERN DIVISION.

Baroda.—The cantonment is in a level, highly cultivated district, and on ground which is only partly above the flood of the river that flows between it and the neighbouring populous, unclean town. Some of the barracks have high plinths, but none have upper floors, and all are placed with their end to the wind. After the severe visitation of sickness in the hot season, it was determined that instead of a whole field battery, only a division should in future be kept at Baroda, and that it should be frequently relieved from the head quarters

at Ahmedabad. It was determined that a new upper floor barrack should be built.

Improvements were made in the ventilation of the quarter guard, a verandah was added to it, and the detention room was enlarged. A new latrine was built. The removal of the huts of native followers near the hospital was contemplated.

In June the battery was attacked with cholera, which had for some time before been prevalent in the town of Baroda. In about five days there were 30 cases, of which 14 proved fatal. The men were at last moved into tents, and although the camp was at a distance of not more than a mile and a half from the barracks, the spreading of the disease among them immediately ceased. The mortality from all causes was 20 in a strength that for the year had an average of only 95.

Ahmedabad.—The increased floor superficies allowed to each man, and the removal hither of two divisions of the Baroda battery rendered it necessary to arrange for temporary shelter for part of the troops.

The existing barracks were of temporary construction, on low plinths and with only a ground floor. The family quarters were insufficiently ventilated. The staff serjeants occupied temporary thatched huts. The guard room was too small and was unventilated. The cells were too small, and they were crowded together. The hospital was a ground floor building of too limited dimensions, and with imperfect subsidiary accommodation.

The barrack temporary ablution room had four bath rooms added to it.

A verandah was added to the quarter guard, and the ventilation of the cells was improved. A rear verandah was being constructed for the family quarters.

The single men's barracks were being paved. Temporary stabling was in progress of construction.

The mean strength of the troops was 143. The ratio of daily sick was 79 in a thousand. The total deaths were five, of which three were from cholera. There had been much cholera in the neighbouring city, first in February, then in May, and also among the natives in the cantonment. The European soldiery had exemption from it until the day after the arrival from Bulsar of a party of invalids who had unfortunately halted some hours at Baroda, where the epidemic was severe. Three men died.

Deesa.—To reduce the excess of men in the barracks, tents were made use of by some as dormitories. Temporary barracks were ordered to be constructed, and also quarters for officers. During the year the ventilation of the infantry barracks was increased by openings near the floor, in the walls and doors. The ablution accommodation was enlarged. The ventilation of the hospital, guard room, and of the canteen was improved. Quarters for 20 families were in progress. Punkahs were given for all married men's quarters. A gymnasium was completed.

For the artillery, harness rooms, and workshops were in progress. The barrack floors were being paved. New latrines and urinaries were built. The ventilation of the guard room was improved. The schoolroom was enlarged. It was proposed to heigthen the walls of the hospital; its windows were to be converted into doors.

The average strength at the station was 837, and the proportion in hospital was but 45 to a thousand. Two men died of cholera. Exclusive of these, the mortality was 16·9 to a thousand, and 6·0 of it was from fever, and 2·2 from hepatic disease.

SIND DIVISION.

Kurachee.—The sanitary condition of the station was bad. In the neighbourhood of the artillery lines there were hollows and watercourses that were made the receptacles of ordure; and the lines of the workmen of the arsenal had become crowded with strangers, and huts had been built beyond the original limits, so as to encroach on the small space that there was between those lines and the barracks. Government, considering the proximity of such a population to be dangerous to the European troops, sanctioned the removal of the workmen to a more distant spot, and the clearing of the ground of their former lines and of all huts. This was effected only at a considerable outlay in compensation to those who had been so wrongly permitted to hold property there. In the Napier lines of the infantry, cesspits had been allowed to exist beside the latrines for liquid

liquid excreta, and at the cook houses for fluid refuse, and also besides the lavatories, altogether in number greater than the regulated establishment could empty regularly. For present exigency an increase of establishment was thought to be necessary, but a more wholesome and economical arrangement for the disposal of waste water and refuse was recommended. The condition of the officers' premises was the subject of complaint and of further inquiry, which led to strict orders for the maintenance of cleanliness being issued from army head quarters.

The water supply was bad; brackish bathing water was obtained from wells near at hand, but water for drinking was conveyed by pipes from wells at a distance, and it was largely impregnated with saline matter, chiefly chloride of sodium, although it had not more organic matter than two-thirds of a grain in a gallon.

New staff serjeants' quarters and quarters for first class hospital establishment were provided. The ground-floor of one of the artillery barracks was converted into a serjeants' messroom and a schoolroom for adults. The children's schoolroom was improved, and a covered bowling alley was being constructed.

In the Napier lines a reading room was being built.

The improvement of all the ablution rooms was ordered.

The average strength was 1,022; the number of daily sick in hospital was 44 per mille. The total mortality was in the ratio of 25·4, or, deducting cholera, it was 15·6. From fever 2·0 died, and the same proportion from diarrhœa and from dysentery.

Hyderabad.—There was no overcrowding in the barracks, but the accommodation in the guard-room at the garrison prison was deficient. The disused horse lines were offensive, but they were cleaned. The barrack urinaries were offensive, and were too near the men's rooms; they were beside the lavatory, and were most objectionably flushed into cesspools with the waste water.

Punkahs and watered tuttees were used in the hot months in barracks, family quarters, and prison cells.

Notwithstanding the proximity of the barracks to the Indus river, water is carried in carts, and the troops are on a small allowance. The baths are unused for want of water.

A new guard-room was being built in the fort.

The mean strength of the European force was 376, the admissions into hospital were 344, or 914·9 to a thousand; the daily sick was in the ratio of only 34 to a thousand, and the mortality but 8·0 from all causes, or, deducting 2·7 for cholera, it was only 5·3 per mille.

BOMBAY BRIGADE.

Colaba.—The condition of the habitations of the native civil population in the neighbourhood of the barracks was greatly improved after the new Municipal Act came into operation. The overcrowding in barracks was relieved in the dry season by using tents as dormitories. It was determined to erect temporary additional barracks. Vehar water was being laid on by pipes to the barracks. The hospital latrine was reconstructed.

New permanent barracks were to be constructed.

The average strength of the wing of the regiment which formed the European part of the garrison was 467, of which 36·5 were constantly in hospital, the ratio being 78 per mille. The ratio of mortality was 42·8 from all causes, or exclusive of cholera, it was 19·2, of which the fever mortality was 10·7, and that from hepatic disease 4·3. Cholera, which had been more severe than usual in Bombay, attacked the corps in March, and between that time and July caused 11 deaths. On the first appearance of the disease the men were moved into tents, but cases continued to occur. The sickness from enthetic disease was comparatively little, the admissions from it being 83·5 per mille.

BELGAUM BRIGADE.

Belgaum.—The artillery horse lines were objectionably placed to the windward of the men's lines, and they were complained of as being offensive and unwholesome. Two quarters from staff serjeants, a staff serjeants' mess-room,

an orderly-room, and a s hoolroom, also a canteen and coffee-room, were built. A workshop is under construction. Two bath-rooms were added to the hospital of the infantry.

Temporary barracks, to meet the present increased demand for room, were ordered to be constructed.

The force consisted of a regiment of infantry and a field and a garrison battery of artillery, amounting to 932 men. The ratio of daily sick was 58, the deaths from all causes 12·9. There were two admissions for cholera, but no deaths. The admissions for enthetic disease were in the proportion to strength of 289·7, and there was one death from it. Yet there is a lock hospital.

ADEN BRIGADE.

Aden.—The rule that every man should have 90 feet of floor superficies, and that verandahs should not be occupied with cots, rendered it necessary to use tents as dormitories. Water was scarce, and the supply was in part obtained by distillation. Vegetables were scarce, and in consequence many men suffered in health. Arrangements were made to obtain potatoes from Egypt during the next south-west monsoon, when it would be difficult to get them from Bombay.

There was much building. Four upper-storied barracks at Front Bay were in progress. Two blocks of quarters for 26 families at the Isthmus were in progress. The barrack floors were paved, and subsidiary buildings were erected. Two upper-storied barracks at Steamer Point were in progress.

The family quarters of the European infantry were ventilated.

The average strength during the year was 712, and the daily sick 34·1, or in the proportion of 47·8 to a thousand. The ratio of deaths to strength from all causes was 59·0, of which 15·4 were from cholera. Hepatic disease caused 7 per mille of deaths. There were 14 men admitted for scurvy, and one died.

SANITARIA.

Poorundah.—At the beginning of the year the barrack-rooms were over-crowded, and the verandahs also were occupied. One of the barracks was burnt. Tents were pitched to relieve the over-crowding. During the year two additional barracks were completed, and the restoration of the one burnt down was in progress. Several out-offices for the barracks were built, and quarters for the hospital subordinate establishment were in progress.

The bazar, which had been allowed to encroach on the barrack precints, was ordered to be removed to a spot chosen for it at a distance. A Moosulman burial-ground was closed, and another was given beyond the cantonment limits. A site for a slaughter-house was chosen down the hill. A tank was fenced for safety, and the drains of the cantonment were improved.

The annual mean strength was 67; the deaths were six, of which three were from cholera. The recent frequent occurrence of this disease appeared to be attributable to the close proximity of the habitations of native followers and settlers, who were in communication with places in the neighbouring valleys where cholera was epidemic. This probable occasion of infection was being removed.

Aboo.—The condition of this station was not satisfactory. The hollows between the undulations of the surface formed shallow, uncultivated, undrained basins, bearing sedges, and were considered the source of malaria. There was much uncleanness of the ground, owing to there being at first no provision for the necessities of the numerous workmen employed in building. To remedy this latter evil, six latrines were erected for the followers. Eleven additional barracks were completed. An upper-floored hospital, two blocks of quarters, each for 12 families, four quarters for staff serjeants, and a library and reading room were in progress. A female hospital, workshop, gymnasium, and a skittle alley were determined on.

This sanitarium is resorted to by invalids from Goozerat and Rajpootana.

Bulsar.—This has hitherto been merely a fair-weather camp for invalids.

It

I was born in Calcutta, where my father and myself both held service under the late East India Company, and he is now a Government pensioner. I was a sub-assistant surgeon in the Bengal Presidency for upwards of six years, and I resigned my appointment there for the special purpose of presenting myself as a candidate for the Indian Medical Service, I arrived in England in March 1860, since which time two changes have been introduced which I could not have anticipated, viz., the amalgamation of the Queen's and India medical services, and more especially the rule above alluded to.

In accordance, however, with the regulations heretofore in operation, I have incurred the heavy expense of passage money, and obtained such certificates of qualification as were deemed requisite, and which are now completely lost to me. A memorandum of these I enclose, as also extracts from correspondence relating thereto with the Director General of the Army Medical Department.

I regret my means will not admit of my prolonging my stay here to ascertain the result of this my solicitation, which I leave to your favourable consideration. I sail to-morrow for Calcutta, but Mr. J. C. Tompkins, of 18, York Place, Baker-street, Portman-square, will act on my behalf, and furnish any other information that may be needed.

I remain, &c.
(signed) *D. Picachy,*
Member of the Royal College of Surgeons of England,
and Graduate Bengal Medical College.

54, Bernard-street, Russell-square,
London, 3 May 1861.

P.S.—Statement of monies actually expended by me:—

	£.	s.	d.	£.	s.	d.
For passage per Peninsular and Oriental Company's steamer from Calcutta	102	–	–			
Ditto - - ditto	117	–	–			
For certificates referred to by accompanying documents	29	8	–			
				248	8	–
For value of appointment as sub-assistant surgeon of second grade resigned as above-mentioned	200	–	–			
For private practice abandoned from February 1860 to June 1861	200	–	–			
				400	–	–
			£.	648	8	–

(signed) *D. Picachy,* M.R.C.S.L.

MEMORANDUM of CERTIFICATES obtained in conformity to the old Regulations for Admission into the Indian Medical Service.

Certificates from King's College for medical, surgical and midwifery practice.
Certificate of operative surgery from Bartholomew's Hospital.
Certificate of attendance at the Charing Cross Opthalmic Hospital.
Certificate of attendance at the Insane Asylum at the Bethlem Hospital.

Sir, War Office, 14 May 1861.

I AM directed by the Secretary of State for War to transmit to you for the consideration of Sir C. Wood, the enclosed copy of a letter from Mr. Picachy, in which he applies for redress for not having been allowed to compete for an appointment in the Army Medical Department.

I am, &c.
The Under Secretary of State for India. (signed) *Ed. Lugard.*

No. 3.
Correspondence.

Mr. D. Picachy.

Sir, War Office, 14 May 1861.

I AM directed by the Secretary of State for War to acknowledge the receipt of your letter of the 3d instant, in which you represent the hardship which has been inflicted upon you, in consequence of your not having been allowed to compete for an appointment in the Army Medical Department, and to acquaint you in reply that Lord Herbert has caused your letter to be referred for the consideration of the Secretary of State for India.

I am at the same time to remind you that you were informed in December last, by the Director General of the Army Medical Department, that you were ineligible to compete for such appointment, on the ground of your not being possessed of a license to practice medicine, and that you have not since reported yourself to have acquired this qualification.

I am, &c.
(signed) *Ed. Lugard.*

D. Picachy, Esq., M.R.C.S.

Sir, India Office, 3 June 1861.

I AM directed by the Secretary of State for India in Council to acknowledge the receipt of your letter dated the 14th ultimo, forwarding copy of an application from Mr. Picachy for compensation for not having been allowed to compete for an appointment in the Army Medical Department. As it appears that this gentleman failed to pass at the examination held in July last for the Indian Medical Service, Sir Charles Wood is of opinion that he is not entitled to compensation from this office.

I have, &c.
(signed) *W. E. Baker*, Colonel.

The Secretary for Military Correspondence,
&c. &c. &c.
War Office.

— No. 4. —

No. 4.
Correspondence.

Dr. S. P. Andy.

CORRESPONDENCE relative to Dr. *S. P. Andy.*

(18,858–184.)

To the Secretary Medical Department, War Office.

5, Noel Street, Islington, N.,
Sir, 12 November 1860.

BEING given to understand that the examination for the Indian Medical Service will be conducted along with the Home Army Medical Service, I shall feel obliged if you will kindly inform me whether the examination will be conducted under the usual rules of the Indian Army, or that of the present rules of the British Army.

I remain, &c.
(signed) *S. Pulney Andy*, M. D.

Army Medical Department,
Sir, 20 November 1860.

IN reply to your note of the 12th instant, relative to the Indian Medical Examination, I have the honour to acquaint you that the subject is at present under the consideration of the Secretary of State for War, and as soon as I receive his decision you will be duly informed.

I have, &c.
(signed) *J. B. Gibson*,
Director General.

Dr. S. Pulney Andy,
5, Noel Street, Islington, N.

No. 4.
Correspondence.

Dr. S. P. Andy.

(18,858–184 A.)

5 Noel Street, Islington,
20 November 1860.

Sir,

I AM a native of India, and received my medical education at Madras Medical College. On the faith of existing regulations as to age and qualifications for admission into Her Majesty's Service in India, I came to England for the express purpose of competing for medical commission in Her Majesty's Indian forces.

I have qualified myself according to the hitherto existing regulations, and have for some months been anxiously preparing for the competition which I understood was likely to take place next February.

The new regulations promulgated within the last few days, without previous notice, assimilating the qualifications as to age, &c., in the hitherto distinct services, have disqualified me (for I am above the prescribed age of 26), and without any fault or neglect on my part, have utterly blighted my prospects, and reasonable expectation of attaining a position, which has long been the object of my ambition, and for which I have made such great pecuniary and other sacrifices.

Seeing, therefore, that I could not possibly have foreseen or guarded against this unexpected change of arrangements, and that I had taken this step, of such serious importance to me, on the faith of publicly recognised regulations, I venture to beg for your kind and favourable consideration of my case, and that I may still be allowed to enter upon the ensuing competition.

I remain, &c.
(signed) *S. Pulney Andy*, M. D.

To the Director General of the
Army Medical Department.

(18,858–184.)

Army Medical Department,
7 December 1860.

Sir,

In forwarding the enclosed form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left hand corner.

I have, &c.
(signed) *J. B. Gibson*, Director General.

S. P. Andy, Esq.,
5, Noel Street, Islington, N.

P. S.—There will not, in future, be any appointments made for special service in India, but the Secretary of State for War will permit any gentleman under 28 years of age, who has been studying for the Indian Medical Service, to compete at the next examination for appointments in the Medical Department, provided he has the qualifications otherwise required.

(18,858–184 B.)

5, Noel-street, Islington, N.
10 December 1860.

Sir,

WITH reference to your letter, No. 18,858—184 A., dated 7th instant, I have the honour to return the enclosed form, filled as requested; and that with regard to the rules it contains requiring a distinct diploma both in surgery and medicine, I beg to bring to your favourable consideration that I have hitherto qualified myself on the faith of the then existing regulations for the Indian Service, in the 3d para. of which it states, "A diploma in surgery, or a degree in medicine, provided an examination in surgery be required for such a degree, from somebody

No. 4. Correspondence.

Dr. S. P. Andy.

competent by law to grant or confer such diploma or degree;" and as the fulfilment of the present requirements so suddenly demanded does not, I am sorry to say, give me time enough to obtain a distinct diploma in surgery, and as the examination for the degree which I now hold as "Doctor of Medicine" from the University of St. Andrews comprised both the subjects of surgery as well as medicine, I therefore pray that you will kindly permit the diploma to be sufficient for both purposes.

I have, &c.

J. B. Gibson, Esq., M. D., C. B.,
Director General
Army Medical Department.

(signed) *S. Pulney Andy*, M. D.

QUALIFICATIONS and EXAMINATION of CANDIDATES for Commissions in the Army Medical Service.

For particulars, see case of Dr. Thompson, page 8.

SCHEDULE OF QUALIFICATIONS.

I, SENJEE PULNEY ANDY, 27 years of age, in May last, a candidate for employment in the Medical Department of the Army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am unmarried, and that I labour under no mental nor constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have the degree of M.D. from the University of St. Andrews, 28th September 1860.

(signed) *Senjee Pulney Andy*, M.D.

5, Noel-street, Islington, N.,
10 December 1860.

Army Medical Department,
14 December 1860.

Sir,

IN acknowledging the receipt of your letter of the 10th instant, enclosing a schedule of your professional education, I have the honour to acquaint you that by the Royal Warrant of the 13th January 1860, regulating the admission of medical officers to the Indian Military Forces, it is laid down that a candidate must possess both a medical and surgical qualification before he can be admitted to the competitive examination for a commission, and it will be equally necessary for you to obtain a diploma or license to practise surgery in addition to your degree in medicine, before your name can be placed on the list of candidates for general service, for the examination which will take place in February 1861, the Secretary of State for War having sanctioned any gentleman under 28 years of age, who has been studying for the Indian Medical Service, to compete at the next examination for appointments in the Medical Department of the Army, provided he has the qualifications otherwise required.

I have, &c.

Dr. S. P. Andy,
5, Noel-street, Islington, N.

(signed) *J. B. Gibson*,
Director General.

(18,858–184 C.)

5, Noel-street, Islington, N.
1 February 1861.

Sir,

IN compliance to the request contained in your letter, No. 18,858—184 B., dated 14th December 1860, I beg to state for your information, that I have obtained the diploma of member of the Royal College of Surgeons of England, and trust that you will be pleased to place my name on the list of candidates for the next competitive examination.

I have, &c.

To the Director General
of the Army Medical Department.

(signed) *S. Pulney Andy*, M.D.

No. 4.
Correspondence.

Dr. S. P. Andy.

(18,858-184 C.)

Army Medical Department,
6 February 1861.

Sir,

In acknowledging the receipt of your letter of the 1st instant, I have now the honour to inform you that the next competitive examination will take place at Chelsea Hospital, on Monday the 18th instant, at 10 o'clock, A.M.

You will therefore be pleased to attend at this office on Tuesday, the 12th instant, between the hours of 11 and 3 o'clock, bringing with you your degrees, diplomas, licenses, certificates of age, and moral character, and letter of recommendation for examination and registry.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

Dr. S. P. Andy, 5, Noel-street,
Islington, N.

(18,858-184 D.)

Senjee Pulney Andy, M.D., St. Andrews.

I CERTIFY that I have examined this gentleman's diploma, degree, and certificates, and find the same in conformity with the regulations.

Certificate of age herewith, scarcely formal, but the best he can obtain.

Army Medical Department,
12 February 1861.

T. G. Fitzgerald, Staff Surgeon.

(18,858-184 D.)

THIS is to certify that I have known S. Pulney Andy from his infancy; he is of respectable parentage, and to the best of my recollection that he was born about the commencement of May, in the year of 1833 (Eighteen hundred and Thirty-three), at Trichinopoly, in the suburbs of Madras Presidency.

(signed) *Mootooveeroo,* Subr-Major,
25th Regiment, N. I.

Madras, 16 January 1860.

Army Medical Department,
16 February 1861.

Sir,

ADVERTING to previous correspondence, I have now the honour to request you will call upon me at this office on Monday morning next, the 18th instant, instead of attending at Chelsea Hospital.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

S. P. Andy, Esq., M.D.
5, Noel-street, Islington.

5, Noel-street, Islington, N.
19 February 1861.

Sir,

WITH reference to the verbal intimation received from you yesterday, stating that natives of India were not eligible for employment in the military service, I have the honour to request that you will kindly favour me with a copy of any rules issued by order of the Government, or any Act of Parliament to that effect. The objection now stated should have been made at once when I applied last year for admission to the examination, which application, on the contrary, met the sanction of the Secretary of State for War; and you directed me to obtain a diploma in surgery, in addition to my degree in medicine, in order to render myself thoroughly eligible according to the recent rules of the service, for the accomplishment of which I have undergone considerable heavy expense, both in money and time.

No. 4.
Correspondence.

Dr. S. P. Andy.

2. If the Bengal mutiny has been a cause to exclude Indians from the military service, I beg to state that I am the first native from the loyal presidency of Madras, and a man of the highest order of caste, who has offered himself for a medical commission. I came to England on the faith of the advertised promises of Her Majesty's Government, thereby infringing the most revered laws of my country, rendering myself subject to excommunication from my relatives and friends, besides from native society. I am sorry to be obliged to add that if this news of my disappointment should reach India, it will create a great deal of grievance and mistrust in the faith of the British Government. Such combined grievances, chiefly relating to caste, as your Government are aware, had been the cause of the late mutiny.

3. The pecuniary remuneration which you stated that the Secretary of State for India is desirous of granting to me, will not in any way enable me to redeem my caste; and as you were the communicant on this subject from the Secretary of State, I deem that it is but right that you should be pleased to lay this my grevance before him, and procure me at least a free passa ge to Madras, and an appointment as a covenanted civil surgeon, either giving me charge of one of the civil dispensaries in the presidency division or the zillahs (collectorates) upon the same footing as those of the zillah surgeons from the Military Medical Service, with regard to pay, privileges, and status in society. There are other offices, the duties of which I am competent to fulfil; such as of an assay-master, if such appointment is vacant at the Mint; and I trust that if, from State reasons, I am deemed ineligible for the appointment for which, on the faith of the published offers of Government, I have laboured and studied both in India and in England, I may be indemnified by some such appointment, so far as the mere pecuniary loss can be satisfied.

4. I shall, however, in such case, deeply regret that I have not the opportunity of serving Her Majesty in my proper medical capacity, to insure which, I have, with great difficulty, made my way to Great Britain, have passed nearly a year in arduous study in this country, and have obtained the degree of Doctor in Medicine, and of Member of the Royal College of Surgeons.

5. I trust, in conclusion, that you will kindly submit this to Sir Charles Wood with your kind support, and obtain an early reply, as my detention in England will only entail on me unnecessary expense and loss of time.

I have, &c.
(signed) *Senjee Pulney Andy*, M.D., M.R.C.S.L.

Dr. J. B. Gibson, C.B., Director General,
Army Medical Department.

To the Right Honourable Sir *Charles Wood*, Secretary of State for India.

5, Noel-street, Islington, N.
25 February 1861.

Sir,

With reference to the request contained in the note of your private secretary, dated 23d instant, I beg to state that my letter of the 19th submitted through the Director General of the Army Medical Department contains a full statement of my case; however, I now submit a brief account of my wishes to your favourable consideration.

In the hope of obtaining a commission in the Military Medical Service, which was the highest boon that natives of India could aspire to in Her Majesty's service, and for which ambition, in the faith of the publicly advertised promises of Her Majesty, I have laboured and studied, both in India and in this country, I made my way to Great Britain with great difficulty, infringing the most revered laws of my country, although a man of the highest caste; I have submitted to abandon this position, and have rendered myself subject to excommunication from my friends and relations. I have passed nearly a year in arduous study in Britain, and obtained the degree of Doctor in Medicine, and Member of the Royal College of Surgeons, for the accomplishment of which I have undergone considerable heavy pecuniary and other sacrifices.

Dr.

No. 4.
Correspondence.
Dr. S. P. Andy.

Dr. Gibson has informed me that you are desirous of granting me some pecuniary remuneration and an employment in the Civil Service; I beg, therefore, that you will be pleased to provide me with a free passage to Madras, and an appointment as a covenanted civil surgeon, either giving me the charge of one of the civil dispensaries in the presidency division, or the zillahs (collectorates), on the same footing as those of the zillah surgeons from the Military Medical Service, with regard to pay, privileges, and status in society. I beg also to bring to your notice that there is an appointment of the kind I allude to granted by the Madras Government to an apothecary (Dr. J. Howard) who came home and graduated, and who, though yet retained in the subordinate Medical Service, holds an appointment as civil surgeon of Ganjam.

My sincere wish is that my appointment should be granted by the Home Government, and instructions sent to the local Government to have my name enrolled on the list of covenanted civil medical servants, instead of having me employed as an uncovenanted sub-assistant surgeon, which is an inferior appointment, and not in any way equal to compensate my labour, pecuniary loss, and my high professional position.

I trust in conclusion that you will kindly take my case into your liberal and generous consideration, and be pleased to grant my request, and despatch me by the next mail if possible, as my detention in England only entails on me heavy additional expense which I can ill afford.

I have, &c.
(signed) *Senjee Pulney Andy*, M.D., M.R.C.S.L.

Army Medical Department,
27 February 1861.

Sir,

I HAVE the honour to forward for the consideration and decision of the Secretary of State for War, the accompanying communication* from Dr. Senjee Pulney Andy, relative to his having been refused admission to the competitive examination of candidates for the Medical Department of the Army.

Letter of 19 February. Page 21.

I have, &c.
(signed) *J. B. Gibson*, Director General.

The Secretary for Military Correspondence,
&c. &c. &c.
War Office.

War Office, 5 March 1861.

Sir,

I AM directed by Lord Herbert to transmit to you the enclosed copy of a letter addressed to the Director General of the Army Medical Department, by Dr. Senjee Pulney Andy, claiming redress for the disappointment to which he has been subjected by not having been allowed admission to the competitive examination of candidates for the Medical Department of the Army.

In laying this letter before the Secretary of State for India in Council, I am to request that you will observe to him that the statements contained in it appear to Lord Herbert to be deserving of serious consideration.

I have, &c.
(signed) *E. Lugard.*

H. Merivale, Esq.
&c. &c. &c.
India Office.

War Office, 5 March 1861.

Sir,

YOUR letter, dated the 19th ultimo, addressed to the Director General of the Army Medical Department, having been referred to Lord Herbert, I am to state to you in reply that it is with sincere regret his Lordship has learnt the disappointment which you have experienced at the discontinuance of a separate medical service for India. He has transmitted a copy of your letter to the Secretary of State for India in Council for his consideration.

I have, &c.
(signed) *E. Lugard.*

Dr. Senjee Pulney Andy,
&c. &c. &c.

No. 4.
Correspondence.
Dr. S. P. Andy.

2. If the Bengal mutiny has been a cause to exclude Indians from the military service, I beg to state that I am the first native from the loyal presidency of Madras, and a man of the highest order of caste, who has offered himself for a medical commission. I came to England on the faith of the advertised promises of Her Majesty's Government, thereby infringing the most revered laws of my country, rendering myself subject to excommunication from my relatives and friends, besides from native society. I am sorry to be obliged to add that if this news of my disappointment should reach India, it will create a great deal of grievance and mistrust in the faith of the British Government. Such combined grievances, chiefly relating to caste, as your Government are aware, had been the cause of the late mutiny.

3. The pecuniary remuneration which you stated that the Secretary of State for India is desirous of granting to me, will not in any way enable me to redeem my caste; and as you were the communicant on this subject from the Secretary of State, I deem that it is but right that you should be pleased to lay this my grevance before him, and procure me at least a free passage to Madras, and an appointment as a covenanted civil surgeon, either giving me charge of one of the civil dispensaries in the presidency division or the zillahs (collectorates) upon the same footing as those of the zillah surgeons from the Military Medical Service, with regard to pay, privileges, and status in society. There are other offices, the duties of which I am competent to fulfil; such as of an assay-master, if such appointment is vacant at the Mint; and I trust that if, from State reasons, I am deemed ineligible for the appointment for which, on the faith of the published offers of Government, I have laboured and studied both in India and in England, I may be indemnified by some such appointment, so far as the mere pecuniary loss can be satisfied.

4. I shall, however, in such case, deeply regret that I have not the opportunity of serving Her Majesty in my proper medical capacity, to insure which, I have, with great difficulty, made my way to Great Britain, have passed nearly a year in arduous study in this country, and have obtained the degree of Doctor in Medicine, and of Member of the Royal College of Surgeons.

5. I trust, in conclusion, that you will kindly submit this to Sir Charles Wood with your kind support, and obtain an early reply, as my detention in England will only entail on me unnecessary expense and loss of time.

I have, &c.
(signed) *Senjee Pulney Andy*, M.D., M.R.C.S.L.

Dr. J. B. Gibson, C.B., Director General,
Army Medical Department.

To the Right Honourable Sir *Charles Wood*, Secretary of State for India.

5, Noel-street, Islington, N.
25 February 1861.

Sir,

With reference to the request contained in the note of your private secretary, dated 23d instant, I beg to state that my letter of the 19th submitted through the Director General of the Army Medical Department contains a full statement of my case; however, I now submit a brief account of my wishes to your favourable consideration.

In the hope of obtaining a commission in the Military Medical Service, which was the highest boon that natives of India could aspire to in Her Majesty's service, and for which ambition, in the faith of the publicly advertised promises of Her Majesty, I have laboured and studied, both in India and in this country, I made my way to Great Britain with great difficulty, infringing the most revered laws of my country, although a man of the highest caste; I have submitted to abandon this position, and have rendered myself subject to excommunication from my friends and relations. I have passed nearly a year in arduous study in Britain, and obtained the degree of Doctor in Medicine, and Member of the Royal College of Surgeons, for the accomplishment of which I have undergone considerable heavy pecuniary and other sacrifices.

Dr.

No. 4.
Correspondence.
Dr. S. P. Andy.

Dr. Gibson has informed me that you are desirous of granting me some pecuniary remuneration and an employment in the Civil Service; I beg, therefore, that you will be pleased to provide me with a free passage to Madras, and an appointment as a covenanted civil surgeon, either giving me the charge of one of the civil dispensaries in the presidency division, or the zillahs (collectorates), on the same footing as those of the zillah surgeons from the Military Medical Service, with regard to pay, privileges, and status in society. I beg also to bring to your notice that there is an appointment of the kind I allude to granted by the Madras Government to an apothecary (Dr. J. Howard) who came home and graduated, and who, though yet retained in the subordinate Medical Service, holds an appointment as civil surgeon of Ganjam.

My sincere wish is that my appointment should be granted by the Home Government, and instructions sent to the local Government to have my name enrolled on the list of covenanted civil medical servants, instead of having me employed as an uncovenanted sub-assistant surgeon, which is an inferior appointment, and not in any way equal to compensate my labour, pecuniary loss, and my high professional position.

I trust in conclusion that you will kindly take my case into your liberal and generous consideration, and be pleased to grant my request, and despatch me by the next mail if possible, as my detention in England only entails on me heavy additional expense which I can ill afford.

I have, &c.
(signed) *Senjee Pulney Andy*, M.D., M.R.C.S.L.

Army Medical Department,
Sir, 27 February 1861.

I HAVE the honour to forward for the consideration and decision of the Secretary of State for War, the accompanying communication* from Dr. Senjee Pulney Andy, relative to his having been refused admission to the competitive examination of candidates for the Medical Department of the Army.

Letter of 19 February. Page 21.

I have, &c.
(signed) *J. B. Gibson*, Director General.

The Secretary for Military Correspondence,
&c. &c. &c.
War Office.

Sir, War Office, 5 March 1861.

I AM directed by Lord Herbert to transmit to you the enclosed copy of a letter addressed to the Director General of the Army Medical Department, by Dr. Senjee Pulney Andy, claiming redress for the disappointment to which he has been subjected by not having been allowed admission to the competitive examination of candidates for the Medical Department of the Army.

In laying this letter before the Secretary of State for India in Council, I am to request that you will observe to him that the statements contained in it appear to Lord Herbert to be deserving of serious consideration.

I have, &c.
(signed) *E. Lugard.*

H. Merivale, Esq.
&c. &c. &c.
India Office.

Sir, War Office, 5 March 1861.

YOUR letter, dated the 19th ultimo, addressed to the Director General of the Army Medical Department, having been referred to Lord Herbert, I am to state to you in reply that it is with sincere regret his Lordship has learnt the disappointment which you have experienced at the discontinuance of a separate medical service for India. He has transmitted a copy of your letter to the Secretary of State for India in Council for his consideration.

I have, &c.
(signed) *E. Lugard.*

Dr. Senjee Pulney Andy,
&c. &c. &c.

No 4.
Correspondence.

Dr. S. P. Andy.

Army Medical Department,
5 March 1861.

THE Director General presents his compliments to Mr. Andy, and with reference to previous correspondence, trusts he will be able to make it convenient to call at this office to-morrow at two o'clock p.m.

Dr. S. P. Andy, 5, Noel-street,
Islington, N.

(18,858-184 D.)

Army Medical Department,
6 March 1861.

Sir,

India Office, 19/2/61.
Colonel Baker to Secretary for Military Correspondence, War Office.

WITH reference to previous correspondence, I have the honour to inform you that in consequence of the varied climates medical officers of Her Majesty's army have to encounter, it has been thought advisable (as will be seen on reference to the enclosed copy of a letter from the India Office) not to subject natives of India to the chances of service out of that country, and it has consequently been decided that native gentlemen should not be permitted to compete for appointments in the general military service. Should you wish to be employed in India, I would suggest that you apply direct to the Secretary of State for India.

I have, &c.
(signed) *J. B. Gibson*,
Director General.

Dr. S. P. Andy, 5 Noel-street,
Islington (N.).

India Office, S.W.,
19 March 1861.

Sir,

I AM directed by the Secretary of State for India in Council to acknowledge the receipt of your letter of the 5th instant, and to acquaint you in reply that Dr. S. P. Andy has addressed to Sir Charles Wood a direct communication on the subject of his claim to compensation for the disappointment of his expectations to be allowed to compete for admission to the medical department of the Indian army, to which service native gentlemen have hitherto been eligible. I am directed further to observe that the rejection of these gentlemen as candidates for the army medical department rests entirely with the Secretary of State for War.

I have, &c.
(signed) *W. E. Baker*,
Colonel.

The Secretary of Military Correspondence,
War Office.

India Office, 21 March 1861.

Sir,

I AM directed by the Secretary of State for India in Council to acknowledge the receipt of your letter, dated 25th February, stating the expectations of professional employment with which you came to England, and requesting that a covenanted civil appointment in the medical service in India may be guaranteed to you, and that you may be compensated for the expense which you have incurred for the attainment of professional knowledge in this country.

Sir C. Wood regrets that the changes lately determined upon in the organization of the Indian armies have prevented the fulfilment of your just expectations to be allowed to compete for a commission in the Indian medical department.

He has instructed the Government of India to take into early consideration the subject of the provision of suitable professional employment for native medical gentlemen; and in consideration of the expenses which you have incurred in coming to this country, and in qualifying yourself for the competitive examination, he is prepared to grant you a sum of 100 *l.* on the production of a certificate

cate from Sir J. R. Martin, Examining Physician, that you would have been qualified to compete at the examination for the Indian medical service under the old regulations, and to grant you 100 *l.* in addition as soon as you have taken your passage to return to India.

No. 4. Correspondence. Dr. S. P. Andy.

I have, &c.

Dr. S. P. Andy. (signed) *W. E. Baker*, Colonel.

CERTIFIED that I have this day examined the various testimonials and diplomas presented by Mr. P. Andy. They prove that Mr. Andy would have been qualified to compete at the examination for the Indian medical service under the old regulations.

Grosvenor-street, 22 March 1861. (signed) *J. R. Martin.*

100 *l.* passed to Mr. Andy 26 March 1861.
100 *l.* passage „ 28 March 1861.

— No. 5. —

CORRESPONDENCE relative to Mr. *Beramjee.*

No. 5. Correspondence. Mr. Beramjee.

To Dr. *Gibson*, C. B., Director General, Medical Department, Horse Guards.

University College, Gower-street, W.C.,
30 November 1860.

Sir,

I WOULD beg respectfully to submit the following circumstances for consideration.

I am a native of Bombay, and by birth a Parsee. I have completed a five years' course of study in medicine, and possess the diploma of the Grant Medical College of Bombay.

In May of last year I left India with the special object of qualifying myself to compete for admission into Her Majesty's Indian Medical Service, and had hoped to have presented myself for examination in June of next year, but according to the regulations, only lately issued, I find that candidates must be unmarried.

Like the great majority of, not only my own class, but of the inhabitants of India generally, I have, although only now 24 years of age, been married for several years; and I may mention that of the 50 students, or thereabouts, now attending the medical college in Bombay, certainly not more than five are unmarried.

I would, therefore, very respectfully venture to represent that, not only would the enforcement of the above-named regulation have the effect of practically nullifying Her Majesty's gracious decision, that the natives of India should be allowed to present themselves for examination along with the rest of her subjects, but that it would fall with particular severity upon myself, as on the faith of the regulations until now in force, I have undergone the expense of coming to this country solely with the before-named object.

May I, therefore, venture to hope that the regulation in question may not be enforced in my case; and on behalf of those of my countrymen, who may in future, like myself, be desirous of obtaining the high honour of an appointment in Her Majesty's Indian service, I would likewise very humbly presume to solicit that the same exemption may be applied to them.

I have, &c.

(signed) *Muncherjee-Beramjee*,
Graduate of the Grant Medical College of Bombay.

No. 5.
Correspondence.

Mr. Beramjee.

Army Medical Department,
5 December 1860.

Sir,

In acknowledging the receipt of your letter of the 1st instant, conveying the Sanction of the Secretary of State for War to candidates for medical appointments in the army, who have been studying with a view to enter the Indian Medical Service, being admitted to the next competitive examination, up to 28 years of age, I have now the honour to submit, for the consideration of Mr. Secretary Herbert, the enclosed application from one of the gentlemen in question, begging on account of the reasons therein set forth, that his marriage may not be considered as rendering him ineligible.

The Secretary for Military Correspondence,
&c. &c. &c.
War Office, Pall Mall.

I have, &c.
(signed) *J. R. Gibson,*
Director General.

Extract from Minute of Secretary of State for War, dated 13 December 1860.

Under the circumstances, which are exceptional, this may be allowed, but, as a rule, our conditions must be observed.

To Dr. *Gibson*, C. B., Director General, Army Medical Department.

University College, Gower-street,
22 February 1861.

Sir,

I beg most respectfully to inform you that I have a diploma in medicine from the Grant Medical College of Bombay. This was obtained by me in April 1860, after undergoing a prolonged examination, conducted by a special Government examiner, three assessors, and by the professors of the college. I beg to mention also that the Grant Medical College is one of the foreign medical schools recognised by the University of London.

The diploma in question is forwarded, with this letter, for your inspection, and I await your decision, whether it will be recognised as a degree in medicine at the competitive examination for assistant surgeons in August next.

I have, &c.
(signed) *Muncherjee Beramjee Colah.*

Army Medical Department,
4 March 1861.

Sir,

Diploma in medicine.

In acknowledging the receipt of your letter of the 22d ultimo, with its inclosure (herewith returned), I have the honour to inform you that the diploma of the Grant Medical College is not admitted as the medical qualification required to be possessed by candidates for the Army Medical Department.

India Office, 19/2/61.
Colonel Baker to Secretary of Military "Correspondence."

I beg also to acquaint you, that in consequence of the varied climates medical officers of Her Majesty's army have to encounter, it has been thought advisable (as will be seen on reference to the inclosed copy of a letter from the India Office), not to subject natives of India to the chances of service, out of that country; and it has in consequence been decided, that native gentlemen should not be permitted to compete for appointments in the general military service.

Should you wish to be employed in India, I would suggest that you apply to the Secretary of State for India.

I have &c.
(signed) *J. B. Gibson,*
Director General.

M. Beramjee, Esq.,
University College, Gower-street, W.C.

No. 5.
Correspondence.
Mr. Beramjee.

Army Medical Department, 5 March 1861.

The Director General presents his compliments to Mr. Beramjee, and with reference to previous correspondence, trusts he will be able to make it convenient to call at this office to-morrow, at two o'clock, p. m.

M. Beramjee, Esq.,
University College, Gower-street.

To the Right Honourable Lord *Herbert,* Secretary of State for War, &c. &c. &c.

University College, Gower-street, W.C.,
—April 1861.

My Lord,

I beg most respectfully to submit the following statement for your Lordship's consideration.

I am a Parsee by birth, a native of Bombay, and a member of the Royal College of Surgeons of England. I came to London in June of last year, with the especial object of competing for an appointment in Her Majesty's Indian Medical Service. Though I had completed a five years' course of medical studies in Bombay, I resolved to spend 12 months in study in this country to further my medical knowledge, and to qualify myself the better for an appointment in the army. About the beginning of November last, it was announced that, in consequence of the amalgamation of the Indian and British forces, there would in future, be only one examination for both the services, and that out of the successful candidates, a certain number would be appointed to Her Majesty's Indian forces. It was also announced that the candidates would be admitted for examination under the same regulations which were applicable to home service. As one of these regulations required that all candidates should be unmarried, and as I was married, it formed an objection to my being admitted for examination. I consequently represented my case by a written application, dated 29th November 1860, to the Director General of the Army Medical Department, who submitted the same to your Lordship, and I was thereafter informed that your Lordship had decided it in my favour. To my utter disappointment, however, I learned from the Director General on the 5th ultimo, that as natives of India, of native parentage, are deemed by your Lordship unfit for entering into Her Majesty's general medical service on account of their supposed physical incapability to perform the active duties of medical officers in cold climates, such as Canada, I will not be allowed to offer myself for examination.

I would, however, humbly venture to hope that the consideration of the following facts will induce your Lordship to rescind the above decision in my case:—

1st. Natives of India are of various denominations, manners, and customs. They differ widely in their mode of life. Their constitutions are different, and in some races, the power of resisting the vicissitudes of climate is very great. I believe, however, that I am correct in stating, that of all the natives of India, none are more English in constitution, and in mode of life generally, than my own countrymen, the Parsees.

2d. The Parsees of the present day, live in all parts of the world; a few are in Australia, a large number in China, many now in England, and within the last year, two of them have established themselves in New York. For the last 50 years or more, the Parsees have borne the severe cold winters of Canton and Shanghai, without the least inconvenience to their health or risk to their life. Within the last six years, they have established themselves in London, and later still, in Liverpool and Manchester, and are at this day here in sufficient numbers (about 45, including children of all ages) to enable a fair inference to be drawn. It is an unquestionable fact, that they have borne several winters, and the last, a most severe one, with perfect impunity. I am moreover able to say, that they follow their different occupations with an increased amount of mental and bodily labour, and yet enjoy better health and strength than they did in India. In my own case, I beg to state, that during the past severe winter, I have, with ordinary warm clothing, been called out at all hours, during the night as well as day, to attend to medical duties, without experiencing any bad effects whatever. On the

No. 5. Correspondence. Mr. Beramjee.

contrary, though working mentally for a longer time during the 24 hours than I used to do in India, I have actually improved in health since I arrived in this country.

I trust your Lordship will excuse the length of this communication, and most anxiously awaiting your decision,

I beg to subscribe myself, &c.

Muncherjee Beramjee Colah.

Army Medical Department,
13 April 1861.

Sir,

ADVERTING to your application for an appointment in the Medical Department of the Army, I have the honour to request you will be pleased to inform me whether you are willing to compete at the next competitive examination, (should you be otherwise qualified) when it takes place, for an appointment on the staff, for service on the West Coast of Africa.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

M. Beramjee, Esq.,
&c. &c. &c.
University College, Gower-street.

War Office, 18 April 1861.

Sir,

I AM directed by the Secretary of State for War, to acknowledge the receipt of your letter of the — instant, in which you request a reconsideration of the decision under which you are prohibited from competing for an appointment in the Army Medical Service.

In reply, I am to acquaint you, that Lord Herbert has taken the opinion of those best competent, from their knowledge and experience, to advise him on the subject, and the result being to confirm his own previous impression as to the constitutional unfitness of the native and mixed races of India and other tropical countries to sustain for any length of time the climate of our northern regions, his Lordship is under the necessity of adhering to the decision arrived at.

I have, &c.
(signed) *Edward Lugard.*

M. B. Colah, Esq.
&c. &c. &c.

To Dr. *Gibson*, C.B., Director General, Army Medical Department.

University College, Gower-street, W.C.,
19 April 1861.

Sir

I HAVE the honour to acknowledge the receipt of your letter dated the 13th instant, desiring to know whether I would be willing to compete for an appointment on the staff for service on the West Coast of Africa.

In reply, I beg respectfully to remind you that I studied in Bombay, and came over to this country for the especial object of competing for an appointment in Her Majesty's Indian Forces. As the Indian and British Forces have been since united into one Royal general service, it is but just that, as a natural born subject of Her Majesty, I be admitted, like other candidates, to the competitive examination for the general service, without any special conditions.

I am prepared, if successful, to serve in any part of the world to which in the course of duty I may be sent; but I feel that my submission to the special terms now proposed, would be not only prejudicial to myself, but imply my acquiescence in what I cannot but regard as an injustice to my countrymen.

I respectfully request that you will be pleased to favour me with an early reply, as my medical studies in England are now drawing to a close.

I have, &c.
(signed) *Muncherjee Beramjee Colah.*

No. 5.
Correspondence.
Mr. Beramjee.

Sir, Army Medical Department, 27 April 1861.

In reply to your letter of the 19th instant, I have the honour to inform you that as it appears by a communication from the India Office that the Secretary of State for India is of opinion that natives of that country, born of native parents, are unsuited for general service in the British Army; I am unable to sanction your being admitted to the competitive examination for appointment in the Medical Department of the Army.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

M. Beramjee, Esq.,
University College, Gower-street, W.C.

— No. 6. —

No. 6.
Correspondence.
Mr.
J. G. G. Grant.

Correspondence relative to Mr. *J. G. G. Grant.*

Sir, 8 Walcot Place West, Kennington Road.

Having failed in obtaining definite information, I am compelled to trouble you. To be brief, I was sent from India by my father, with the express view of studying for Her Majesty's Indian forces; and though European, I was sufficiently long in that country to speak the language well. Having obtained the Edinburgh M. D., I laboured to fulfil every condition imposed by the late Indian regulations, which gave me to understand that "all natural-born subjects of Her Majesty, between 21 and 28 years of age," and of sound health, would be eligible, provided that they could produce in addition to a degree in medicine, including a surgical examination (which the Edinburgh M. D. does), certificates of extra attendance on classes, and hospitals therein specified. All these conditions have I fulfilled to the letter, necessitating, need I add, extra outlay; and now, at the "eleventh hour," after much anxiety, you may conceive my serious surprise and disappointment, on receiving from the India Office an intimation to the effect that "all candidates" at the next examination will be subject to the regulations issued by the War Office"! not only rendering past labour in conforming to the late regulations of no avail, but imposing a restriction as to age in itself sufficient to exclude me, for I am past 26 and nearer 27; thus compelling me to return to India after expenditure of time and means, without obtaining the sole object of my studies in Britain. Surely I am mistaken in supposing the new regulations to apply retrospectively, and without consideration for one, who, though qualified according to regulations but lately supplied him, and, so to speak, ready for the next examination, would thus be excluded from the only opportunity of competing, and by circumstances over which he could have no control?

It would only be with the certainty of being admitted to the next examination under the late regulations that I could now afford to delay here longer.

Apologising for the trouble I cause you, and with confidence in your kindly aid,—

I am, &c.
(signed) *James G. G. Grant,* M. D.

J. B. Gibson, M. D., C. B.
Director General Army Medical Department.

Army Medical Department,
Sir, 6 December 1860.

In forwarding the enclosed form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed

No. 6. Correspondence.

Mr. J. G. G. Grant.

outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left hand corner.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

J. G. G. Grant, Esq.
8, Walcot-place West, Kennington-road.

P.S.—There will not in future be any appointments made for special service in India, but the Secretary of State for War will permit any gentleman under 28 years of age who has been studying for the Indian Medical Service to compete at the next examination for appointments in the Medical Department, provided he has the qualifications otherwise required.

8, Walcot-place West, Kennington-road,
8 December 1860.

Sir,

In accordance with your instructions, dated 6th December, No. 18,858–188, I have the honour to enclose you the form, filled up to the best of my present ability. Before the next examination I could obtain a qualification in surgery, in addition to the M.D. I already possess. On the strength of the late Indian regulations (which held no objection to the married), and with the hope of an appointment in Her Majesty's Indian forces after the usual examination, I married in August last before leaving Scotland, to avoid the expense and delay of a return to that country, understanding at that time that I should most probably (if successful) be sent to Chatham, and thence to India; but the recent alteration in regulations (as I see by the schedule supplied) excludes me from the next examination, unless my unfortunate case be deemed worthy of consideration. Apologising for further trouble on a subject in which I have reason already to thank you,—

I am, &c.
(signed) *J. G. G. Grant.*

J. B. Gibson, M. D., C. B.,
Director General Army Medical Department.

QUALIFICATIONS and EXAMINATION of CANDIDATES for Commissions in the Army Medical Service.

For particulars, see case of Dr. Thompson, page 8.

SCHEDULE OF QUALIFICATIONS.

I, JAMES GEORGE GARROW GRANT, 26 years of age in January last, *vide* accompanying certificate, a candidate for employment in the Medical Department of the Army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am not unmarried, and that I labour under no mental nor constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have the degree of M.D. from the University of Edinburgh, dated 1st August 1859.

(signed) *James George Garrow Grant.*

8, Walcot-place West, Kennington-road,
8 December 1860.

Army Medical Department,
15 December 1860.

Sir,

In acknowledging the receipt of your letter of the 8th instant, enclosing a schedule of your professional education, I have the honour to acquaint you that by the Royal Warrant of the 13th January 1860, regulating the admission of medical officers to the Indian Military Service, it is laid down that a candidate must

No. 6.
Correspondence.

Mr.
J. G. G. Grant.

must possess both a medical and a surgical qualification before he can be admitted to the competitive examination for a commission, and it will be equally necessary for you to obtain a diploma or license to practise surgery, in addition to your degree in medicine, before your name can be placed on the list of candidates for general service for the examination which will take place in February 1861, the Secretary of State for War having sanctioned any gentleman under 28 years of age, who has been studying for the Indian Medical Service, to compete at the next examination for appointments in the Medical Department of the Army, provided he has the qualifications otherwise required.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

J. G. G. Grant, Esq.,
8, Walcot-place West, Kennington-road.

I beg to add that the subject of marriage is at present under the consideration of Mr. Secretary Herbert.

Sir, 8, Walcot-place, Kennington-road.

WILL you oblige me with any information in your power, with regard to the subject of my last letter, dated 8 December 1860? I am sorry to trouble you, but if permitted to compete at the approaching examination in February, I shall require as much time as possible to prepare in qualifications for the purpose.

I am, &c.
(signed) *J. G. G. Grant*, M.D.

The Secretary,
Army Medical Department,
6, Whitehall-yard.

Sir, Army Medical Department, 9 January 1861.

WITH reference to my letter of the 5th,* and to your reply of the 13th ultimo, I have the honour to submit for the consideration of the Secretary of State for War, the enclosed applications from Messrs. J. J. G. Grant and E. Foster, candidates for appointments in the army, who have been studying with a view to enter the Indian Medical Service, and who are both married, soliciting that the latter circumstance may not be considered an objection to their being allowed to attend the next competitive examination.

* Page 26.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

The Secretary for Military Correspondence,
&c. &c. &c.

Sir,, War Office, 21 January 1861.

I HAVE laid before the Secretary of State for War your letter of the 9th instant, with its applications (herewith returned), from Messrs. J. J. G. Grant and E. Foster, who had been studying for the Indian Medical Service, to be allowed to attend the next competitive examination for medical appointments in the army, notwithstanding the fact of their being married.

In reply, I am to state, that as much embarrassment might be caused by complying with these gentlemen's wishes, Lord Herbert would wish them to be informed that their request cannot be granted.

I have, &c.
(signed) *F. Paulet.*

The Director General
of the Army Medical Department.
&c. &c. &c.

No. 6.
Correspondence.

Mr.
J. G. G. Grant.

Army Medical Department,
Sir, 25 January 1861.

With reference to previous correspondence, relative to your being allowed to attend the next competitive examination for medical appointments in the army, notwithstanding the fact of your being married, I have now the honour to inform you that, the subject having been under the consideration of the Secretary of State for War, his Lordship has decided that your application cannot be entertained.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

J. G. G. Grant, Esq.,
8, Walcot-place W., Kennington-road.

— No. 7. —

No. 7.
Correspondence.

Mr. E. Foster.

Correspondence relative to Mr. *E. Foster.*

39, Bloomsbury-street, New Oxford-street, W.C.,
Sir, 8 December 1860.

Having observed in the "Lancet" an advertisement that in future there will be no special examination for the Indian Medical Service, I beg to ask whether gentlemen who are married will be admitted as candidates for any branch of the Army Medical Service, if it be necessary for all candidates to be between 21 and 26 years of age, and to possess a double qualification.

Is the diploma of the Faculty of Physicians and Surgeons, Glasgow, received as a double qualification?

I am, &c.
(signed) *E. Foster.*

J. B. Gibson, Esq.,
Army Medical Department.

Army Medical Department,
Sir, 12 December 1860.

In acknowledging the receipt of your letter of the 8th instant, I have the honour to inform you, that any candidate over 26, but under 28 years of age, who can afford satisfactory evidence that he has been studying with a view of entering the Indian Medical Service (now abolished), will be allowed to attend the next competitive examination for candidates for commissions in the general service, provided he has the qualifications otherwise required; and with regard to the marriage of such candidates, this subject is now under the consideration of the Secretary of State for War.

I beg to add that a double qualification is indispensable, one to practise medicine, and one to practise surgery, which must be obtained from two distinct bodies. The diploma referred to by you can be received as a surgical qualification only.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

E. Foster, Esq., 39, Bloomsbury-street,
New Oxford-street, W.C.

No. 7.
Correspondence.
Mr. E. Foster.

39, Bloomsbury-street, New Oxford-street, W.C.,
12 December 1860.

Sir,

I BEG to acknowledge the receipt of your letter of this day, and to thank you for the information you have afforded me. I would further beg to ask if the license of the Apothecaries Hall, Dublin, will be received as a medical qualification; also, how soon and by what means I shall ascertain the decision of the Secretary of State regarding married candidates? Your letter bears number 18,858—203.

I am, &c.
(signed) *E. Foster.*

J. B. Gibson, Esq., Director General; or
The Under Secretary of State for War.

P.S.—Please send me a copy of the regulations for the Army Medical Service; also, one of chart to be filled up.

Army Medical Department,
17 December 1860.

Sir,

IN forwarding the enclosed form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left hand corner.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

E. Foster, Esq., 39, Bloomsbury-street, New Oxford Street, W.C.

P.S.—The license of the Apothecaries Hall, Dublin, is not received as a medical qualification for appointments in the army, and the decision of the Secretary of State for War relative to marriage will be communicated to you as soon as I am informed of the same.

39, Bloomsbury-street, W.C.,
New Oxford-street, 18 December 1860.

Sir,

I HAVE the honour to acknowledge yours of yesterday; and beg to state that, as the Hall of Ireland is not acknowledged by the Army Board as a medical qualification, I shall not be able to present myself at the next examination; but as the service is my future object, I await your reply regarding marriage. Your last communication bears number 18,858-203 A.

I am, &c.
(signed) *E. Foster.*

J. R. Gibson, Esq.,
Director General.

Army Medical Department,
5 January 1861

Sir,

WITH reference to your letter of the 18th ultimo, I have the honour to request you will immediately return the schedule sent you on the 17th December last, filled up as far as your education has proceeded; and with regard to marriage, I beg to inform you that the subject is still under the consideration of the Secretary of State for War.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

E. Foster, Esq.,
39, Bloomsbury-street, New Oxford-street, W.C.

No. 7.
Correspondence.

Mr. E. Foster.

Mr. Foster's application referred to Secretary for Medical Correspondence; 9th January; *see* supra, page 31.

For War Office reply, dated 21 January; *see* supra, page 31.

Army Medical Department,
25 January 1861.

Sir,

With reference to previous correspondence relative to your being allowed to attend the next competitive examination for medical appointments in the army, notwithstanding the fact of your being married, I have now the honour to inform you that, the subject having been under the consideration of the Secretary of State for War, his Lordship has decided that your application cannot be entertained.

(signed) *J. B. Gibson,*
Director General.

E. Foster, Esq.,
39, Bloomsbury-street, New Oxford-street,
W. C.

— No. 8. —

No. 8.
Correspondence.

Mr. Goodall.

Correspondence relative to Mr. *Goodall.*

(18,858—263.)

James Brown Gibson, Esq., M.D., C.B., Director General, Army Medical Department.

Sir,

I have the honour to request that you will forward me information respecting the time during which the next Army Medical Examinations will occur, and other particulars necessary to be known.

I have, &c.
(signed) *Henry Goodall,* M.D.,
Honorary Physician Royal Infirmary, Glasgow.

(18,858—263.)

Army Medical Department,
31 January 1861.

Sir,

In forwarding the enclosed Form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left hand corner.

I have, &c.
(signed) *J. B. Gibson,* Director General.

P.S.—The next Competitive Examination will commence on the 18th proximo.

H. Goodall, Esq.,
Royal Infirmary, Glasgow.

No. 8.
Correspondence.
Mr. Goodall.

(18,858—263 A.)

James Brown Gibson, Esq., M.D., C.B., Director General, Army Medical Department.

Royal Infirmary, Glasgow,
4 February 1861.

Sir,

I HAVE the honour to forward you the enclosed Form, with the blanks filled up, as desired. The degree, diploma, &c., I will lodge at the War Office when I go down to London, which will be at the end of this week.

I have, &c.
(signed) *Henry Goodall.*

QUALIFICATIONS and EXAMINATIONS of CANDIDATES for Commissions in the Army Medical Service.

FOR particulars, *see* case of Dr. Thompson, page 8.

SCHEDULE OF QUALIFICATIONS.

Recommended by *Allen Thomson*, M.D., Professor of Anatomy in the University of Glasgow.

I, Henry Goodall, 24 years of age, in January last, a candidate for employment in the Medical Department of the Army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being Gazetted.

I declare that I am unmarried, and that I labour under no mental or constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have the degree of M.D. from the University of Glasgow.

I have a diploma in surgery from the Royal College of Surgeons of England.

(signed) *Henry Goodall.*

2 February 1861,
Royal Infirmary, Glasgow.

(18,858—263A.)

Army Medical Department,
6 February 1861.

Sir,

IN acknowledging the receipt of your letter of the 4th instant, I have now the honour to inform you that the next Competitive Examination will take place at Chelsea Hospital, on Monday, the 18th instant, at 10 o'clock, A.M.

You will therefore be pleased to attend at this office on Thursday the 14th instant, between the hours of 11 and 3 o'clock, bringing with you your degrees, diplomas, licenses, certificates of age and moral character, and letter of recommendation, for examination and registry.

I have, &c.
(signed) *J. B. Gibson*, Director General.

H. Goodall, Esq.,
Royal Infirmary, Glasgow.

(18,858—263 B.)

Henry Goodall, M.D. (Glasgow University).

I CERTIFY that this gentleman's degree, diploma and certificates are in conformity with the regulations.

Certificate of Age herewith.

(signed) *Thos. Geo. FitzGerald*,
Staff Surgeon.

No. 8.
Correspondence.
Mr. Goodall.

Register of the Birth of the undermentioned Child.

Name.	Date of Birth.	Parent's Name.	By whom the Ceremony Performed.
Henry - -	2 January 1837	Henry Goodall -	Baptised, 8th January 1837, by me, *Arthur Hamilton*, Chaplain.

Tavoy, 8 January 1837.

(18,858—263 B.)

College, Glasgow, 9 February 1861.

I HAVE much pleasure in recommending Dr. Henry Goodall as well qualified to be a candidate for a medical appointment in the army.

(signed) *Allen Thomson*, M.D.,
Professor of Anatomy.

Army Medical Department,
Sir, 16 February 1861.

ADVERTING to previous correspondence, I have now the honour to request you will call upon me at this office on Monday morning next, the 18th inst., instead of attending at Chelsea Hospital.

I have, &c.

(signed) *J. B. Gibson*, Director General.

H. Goodall, Esq., 1, St. Augustine-road,
Camden Town, N.W.

1, St. Augustine-road, Camden Town,
My Lord, 23 February 1861.

IN having the honour of addressing you, I beg to call your attention to the following facts :—I was a candidate for an appointment in the Medical Department of Her Majesty's General Military Service. My application as a candidate was accepted, and I received a ticket for the examinations, which commenced on the 18th current. According to request, I attended upon the Director General on the morning of the same date, when I was informed by him that he had received orders to exclude from competing at the examinations all those born in India. The reasons given for which were, that it had been found by experience that all such persons are not capable of withstanding the injurious effects of the extremes of climate which Her Majesty's army had to experience. Allow me, with all deference, to state that such a decision, made at such a moment, is extremely unjust for all whom it especially concerns; for me it is particularly so.

First. I have been for the last 10 years a student in this country, between five and six of which I devoted myself strictly to medicine, and for the last two years was a house surgeon in the Glasgow Royal Infirmary. I had always in view the military medical service.

Second. My father, Henry Goodall, is at present Surgeon Major in the 25th Madras Native Infantry, stationed at Mercara. He has served for the last 30 years. May I put the question, are Her Majesty's servants to be rewarded for their long services by their children being deprived of the rights which they themselves enjoy?

Third

medical service of Her Majesty's forces, I shall feel obliged by your kindly informing me whether I shall be admitted, or not, to the next competition; for it would materially influence my prospects and proceedings.

I am the son of European parents, but born in India and educated there. Last year I came to England for the purpose of completing my medical education, with the object of entering the Indian medical service. I am at present preparing to qualify myself for the several diplomas requisite, and propose to present myself at the next competition, if deemed admissible.

I have, &c.
(Signed) W. Lyons.

The Director General,
Army Medical Department.

(18,858—317.)

Army Medical Department,
Sir, 9th April 1861.

In acknowledging the receipt of your letter of the 30th ultimo, I have the honour to inform you, that if both your parents were Europeans and British subjects you will be eligible to attend the next competitive examination for appointments in the Medical Department of the Army, provided you are then otherwise qualified.

I have, &c.
(Signed) J. B. Gibson,
Director General

W. Lyons, Esq.,
16, Portugal Street, Lincoln's Inn.

(18,858—317 A.)

2, Dinton Villas, Merton Road, Tooting,
Sir, 3d May 1861.

I have the honour to acknowledge the receipt of your letter of the 9th April, in reply to my inquiry regarding my eligibility for Her Majesty's army medical service. With reference to the statement in that letter, that my eligibility would entirely depend upon my being of pure European parentage, I beg to inform you that I am on the paternal side only of pure European lineage, my mother being of mixed blood, the daughter, however, of an European.

I shall esteem it a favour if kindly informed whether, under these circumstances, I am debarred from entering Her Majesty's medical service.

I have, &c.
(Signed) W. Lyons.

(18,858—317 A.)

Army Medical Department,
Sir, 8th May 1861.

In acknowledging the receipt of your letter of the 3d instant, I regret to inform you that, under the circumstances therein mentioned, you are not eligible to attend the competitive examination for an appointment in the Medical Department of the Army.

I have, &c.
(Signed) J. B. Gibson,
Director General.

W. Lyons, Esq.,
2, Dinton Villas, Merton Road, Tooting.

No. 12.

No. 12.

Correspondence relative to Dr. H. A. Kidd.

London, 37, Tavistock Street, Covent Garden,
Sir, 16th May 1861.

With due respect, I beg to solicit your attention to my very hard case, and hope it will meet with a favourable consideration.

I am the son of a warrant officer of the Honourable Company's service; of mixed parentage.

No. 14.

No. 14.

Correspondence relative to Mr. G. F. Hoff.

5, Norfolk Street, Strand,
30th May 1861.

Sir,

I take the liberty of presenting the following petition for your perusal and kind consideration.

I am an East Indian by birth, the son of an old servant of the late Honourable East India Company, the enclosed list of testimonials showing my father's services.

I have studied medicine for four years at the Calcutta Medical College, and passed the first examination of that college, it having been my intention at that time to have graduated and taken Government employ out in India; but the Indian medical service having been thrown open to competition, and several of my countrymen being successful in getting into the service, I was likewise induced to come to this country for the same purpose, with the view of bettering myself; and accordingly left the Calcutta College and came to England. On my arrival I was informed by the Secretary of the Royal College of Surgeons, London, that I needed a further attendance at some recognised college and hospital before I could be permitted to pass for my degree, without which I was not eligible to compete for a commission. I accordingly left London, and proceeded to Edinburgh, where I have been attending the University and Royal Infirmary for the last two years; and now, when I have just completed all that was necessary, and am ready to go up for my degree, I find that, owing to certain new rules, all those whose parents are not purely Europeans are ineligible to compete for army appointments; this has placed me in a very awkward predicament, as the little money which I possessed, and which would have just enabled me to have accomplished the object of my visit to England, is very nearly all expended in living, paying for classes, hospital practice, &c., &c., and my father has not the means to assist me, his income being very small; further, having a large family to support.

My chief object in petitioning you is, not that I have any cause of finding fault with the new Government rules, prohibiting Indians from entering the army, but merely that my hard case may receive some consideration from the Government; begging your kind support at the same time, so that I may receive some remuneration to make up for the great disappointment I have met with, and the heavy expenses I have been put to, just to enable me to finish and return back to India without further delay.

Major General James Ramsay (late Commissary General in India), and the only friend I have in London, if referred to, can certify to the above statement.

Hoping you will view my peculiarly hard case favourably,

I have, &c.
(Signed) George F. Hoff.

To the Secretary of State for India,
&c. &c. &c.

Sir,

India Office, 7th June 1861.

I am directed by the Secretary of State for India in Council to acknowledge the receipt of your letter dated 30th ultimo, and to acquaint you, with reference to the requests therein contained, that in consideration of the expenses you have incurred with a view of entering the Indian medical service, Sir C. Wood will grant you 100*l.* on the production of a certificate from Sir J. R. Martin, examining physician, that you would have been qualified to enter that service under the old regulations, and another 100*l.* when you have engaged your passage to return to India.

It will also be necessary that you should obtain a certificate from the Army Medical Department, that you are ineligible for Her Majesty's service.

The testimonials enclosed in your letter are herewith returned.

I am, &c.
(Signed) W. E. Baker,
Colonel.

G. F. Hoff, Esq.

No. 15.

No. 15. No. 15.

COPY of the REPORT of MEDICAL OFFICERS appointed to examine the STATE of HEALTH of BRITISH SUBJECTS born in INDIA, APPLICANTS to be allowed to compete for EMPLOYMENT in HER MAJESTY'S MILITARY MEDICAL SERVICE.

16th February 1861.

NAME.	REMARKS.
Senjee Pulney Andy, M.D.	Fit.
Daniel Robert Thompson	Fit.
Henry Goodall	Fit.

These gentlemen were passed with a view to their serving in India.

(Signed) THOS. GEO. FITZGERALD,
Staff Surgeon.
WM. A. WHITE, M.D.,
Staff Assistant Surgeon.

Army Medical Department.

No. 16. No. 16.

COPY of REPORT of MEDICAL BOARD appointed to re-examine the several Applicants.

IN compliance with instructions contained in War Office letter, dated 2d March 1861, that Sir Ronald Martin, Sir John Liddell, Director General, Naval Medical Department, and Dr. Gibson, Director General, Army Medical Department, should report their joint opinion as to whether certain gentlemen of colour were physically qualified to stand the exposure to the various climates in which they would be called upon to serve were they admitted into the medical department of Her Majesty's army,

We have to report, that it is our deliberate opinion, founded on experience, that the native and mixed races of India and other tropical countries will never be able to sustain for any length of time the climate of our northern regions; and that they can only be employed advantageously to the public service in climates similar to those in which their race exists.

We carefully examined Messrs. Goodall and Thompson, men of colour with Asiatic features; and, although we could not discover any marked bodily defect that would exclude them from employment in a tropical climate, still they are constitutionally unfit for service, in the various northern climates in which the British army is called upon to serve.

(Signed) J. R. MARTIN.
J. LIDDELL,
Director General, Royal Navy.
J. B. GIBSON,
Director General, Army Medical Department.

Army Medical Department,
12th March 1861.

COPY of CIRCULAR LETTER, 14th November 1860, from the INDIA OFFICE, communicating the CESSATION of SEPARATE MEDICAL COMPETITIVE EXAMINATIONS for INDIA.

Sir,

I AM directed by the Secretary of State for India in Council to acquaint you, with reference to your letter of the [illegible] that no separate competitive examination for the Indian medical service will take place in January next; but that at the next examination for assistant surgeons for Her Majesty's army such additional number of appointments will be open to competition as will be sufficient to provide the requirements of the medical service of India. Also,

All candidates at that examination will be subject to the regulations issued by the War Office with respect to qualifications and examination.

[illegible] am, &c.

India Office, 14th November 1860.

(291.)

INDIA.—MEDICAL AND SURGICAL MILITARY AND NAVAL OFFICERS.

RETURN

To an Address of the HOUSE OF LORDS,
dated 21st June 1861,

FOR

COPIES of all RULES and REGULATIONS in force on the passing of the 21st and 22d VICTORIA, Cap. 106., in any respect touching the NOMINATION or EXAMINATION for MEDICAL and SURGICAL, MILITARY and NAVAL Officers in INDIA, and COPIES of any additional REGULATIONS subsequently made on the same subject, under the Section 27 of the said Act.

&c. &c.

(*The Lord Monteagle of Brandon.*)

Ordered to be printed 1st August 1861.

(219.)

EAST INDIA (ARMY MEDICAL DEPARTMENT).

RETURN to an Address of the Honourable The House of Commons, dated 4 June 1861 ;—*for*,

"COPIES of all APPLICATIONS addressed by BRITISH SUBJECTS born in *India*, to the Secretary of State for *India* and to the Secretary of State for War, for permission to be allowed to compete at Public Examinations for employment in HER MAJESTY'S MILITARY MEDICAL SERVICE :"

"Of all REPLIES to such APPLICATIONS, and of all CORRESPONDENCE consequent thereon :"

"Of the OFFICIAL REPORTS of the MEDICAL OFFICERS appointed to examine the state of Health of the several Applicants :"

"And, of all REPORTS of MEDICAL BOARDS appointed to re-examine the several Applicants (in continuation of Parliamentary Paper, No. 199 of the present Session).

War Office,
24 June 1861.

THOMAS GEORGE BARING.

(*Colonel Sykes.*)

Ordered, by The House of Commons, *to be Printed*,
25 *June* 1861.

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BOMBAY BRA
OF THE
yal Asiatic Society.

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(18,858—264.)

Army Medical Department,
2d February 1861.

Sir,

In forwarding the enclosed form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left-hand corner.

I have, &c.
(Signed) J. B. Gibson,
Director General.

A. Solomon, Esq.,
8, Saville Row, Walworth Road.

(18,858—264 A.)

No. 8, Saville Row, Walworth Road,
4th February 1861.

Sir,

I beg to forward the enclosed form duly filled up by me, and two certificates of moral conduct and character, from Rev. Goiran, Pro. Vicar Apost. of Western Bengal, and Rev. E. Fernandes, Senior Curate, M.A., as requested per letter No. 18,858—264, of 2d instant, from the Director General, Medical Department. I alsb beg to apply for employment in the medical department of Her Majesty's army, and am ready to comply with every required condition necessary for general services, whether at home or abroad.

I have, &c.
(Signed) Alex. Solomon.

The Under Secretary of State
for War, War Office.

Cathedral House, 8th October 1860.

I have much pleasure to certify that I have known Mr. Alex. Solomon for many years, and I have found him a most charitable and attentive man in his profession; an exemplary Catholic, and a worthy member of society.

(Signed) E. A. Fernandes,
Senior Curate, M.A.

Calcutta, 8th October 1860.

I have much pleasure of certifying that Mr. A. Solomon, who goes to England to get his diploma as M.D., is a good Catholic, and a person for whom I have much esteem.

(Signed) Aug. Goiran,
Pro. Vicar Apost. of Western Bengal.

Qualifications and Examination of Candidates for Commissions in the Army Medical Service.

For particulars, *see* case of Dr. Thompson, page 10.

Schedule of Qualifications.

I, Alexander Solomon, do hereby declare that I was 27 years of age in April last, a candidate for employment in the Medical Department of the Army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am unmarried, and that I labour under no mental nor constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have a licence to practise medicine from the Calcutta Medical College, recognised by London University.

I have a diploma in surgery from the same institution.

I have a licence to practise surgery from the same institution.

(Signed) Alexander Solomon,
4th February 1861.
8, Saville Row, Walworth Road.

(18,858—264 A.)

Army Medical Department,
9th February 1861.

Sir,

In acknowledging the receipt of your letter of the 4th instant, enclosing a schedule of your professional education, I have the honour to inform you, that if you can obtain a decree or licence to practise surgery from two separate and distinct bodies in Great Britain or Ireland, legally authorized to grant such, before the 18th instant, you will be allowed to attend the competitive examination on that day; but you must distinctly understand that as you will be 28 years of age in April next you will not be eligible to attend any examination after the present one.

I have, &c.
(Signed) J. B. Gibson,
Director General.

A. Solomon, Esq.,
8, Saville Row, Walworth Road.

(18,858—264 B.)

8, Saville Road, Walworth Road, S.
11th February 1861.

Sir,

I beg leave to acknowledge the receipt of your letter, No. 18,858—264, dated 9th instant.

As it would be obviously impracticable to obtain the requisite additional qualifications before Monday next, I have, after consultation with Dr. Sharpey, to whom you kindly gave an interview yesterday, made a statement of my case in form of a memorial to Lord Herbert, which I send enclosed, and which I beg you will be so kind as to present to his Lordship on my behalf.

I have, &c.
(Signed) Alex. Solomon.

Dr. Gibson, C.B.,
Director General, Army Medical Department.

To the Right Honourable Lord Herbert; of Lea, Her Majesty's Principal Secretary of State for War.

The humble memorial of Alexander Solomon, of Calcutta, showeth:—

That your memorialist went through a full course of medical study in the Medical College of Bengal, and, after passing the prescribed examinations, duly obtained the diploma or certificate of competency to practise medicine, surgery, and midwifery, which is conferred by that college, under the authority of Government.

That the said diploma has heretofore been accepted as sufficient qualification to enable a candidate to enter into the competitive examination for the commission of assistant surgeon in Her Majesty's Indian forces.

That, in full reliance on such sufficiency of qualification, your memorialist proceeded from Calcutta to London, with the view of undergoing the examination; but that since his arrival in this country he has found that in consequence of the examination for assistant surgeonships in the Indian army having recently merged in the examination conducted under the Army Medical Department, he will be required, in addition to his present qualification, to possess a "degree or licence" in medicine, and a diploma or licence in surgery, from two separate bodies in Great Britain or Ireland.

That your memorialist is prepared to comply with that condition before receiving a commission, and has indeed already taken the preliminary steps for obtaining the diploma of the Royal College of Surgeons; but the next examination for medical commissions in the army takes place on Monday the 18th instant, within which time it is manifestly impracticable for him to fulfil the afore-mentioned condition, and before another army examination takes place he will be excluded altogether by being beyond the limit of age, already extended in his case to 28.

Your memorialist, therefore, humbly begs, that, in consideration of these circumstances, your Lordship will be pleased to grant him indulgence so far as to permit him in the meantime to enter the ensuing examination on the 18th instant, in virtue of his diploma from the College of Bengal, but on the express condition that, should he be so fortunate as to be placed, he shall provide himself with the further qualifications from medical bodies in Great Britain before he receives his commission.

Your memorialist trusts he may be permitted to state, as additional claims to your Lordship's favourable consideration of his case, that while a student at the Bengal College he obtained two certificates of honour, and that during the period of the Indian mutiny, whilst house surgeon to the Medical College Hospital at Calcutta, he did extra

duty

duty in order to permit of the accommodation of the hospital being extended to sick and wounded men of Her Majesty's European army, and that in order to render this service he cheerfully gave up for a time a private practice of (to him) considerable emolument.

(Signed) ALEX. SOLOMON.

Army Medical Department,
12th February 1861.

Sir,

I HAVE the honour to forward, for the consideration of the Secretary of State for War, the enclosed memorial from Mr. A. Solomon, a candidate for a commission in the Medical Department of the Army; and under the circumstances stated therein, I beg to recommend that Mr. Solomon may be permitted to attend the competitive examination on Monday the 18th instant, upon the conditions stated; viz., that, should he be successful, he must, before he can be granted a commission, procure a medical and surgical qualification, in accordance with the existing regulations.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

The Secretary for Military Correspondence,
&c. &c. &c.,
War Office.

War Office, 18th February 1861.

Sir,

I AM directed by the Secretary of State for War to transmit to you, for the consideration of Sir Charles Wood, the accompanying copy of a letter from the Director General of the Army Medical Department, forwarding an application from Mr. A. Solomon, a native of India, to be permitted to attend the competitive examination for admission to the medical service of the army.

Lord Herbert will be glad to be informed whether Sir Charles Wood is of opinion that Mr. Solomon, and gentlemen similarly situated, should be allowed to compete for these appointments.

I have, &c.
(Signed) ED. LUGARD.

The Under Secretary of State for India,
&c. &c. &c.

*** For reply, see letter of the 19th February, page 8.

(18,858—264 C.) *

8, Saville Row, Walworth Road,
19th February 1861.

Sir,

I HAD the honour, on Tuesday the 12th instant, to deliver to you a memorial for presentation to Lord Herbert, praying that his Lordship would be pleased to admit me to the competitive examination for assistant surgeoncy in the army on the 18th instant, on condition that I provided myself with the British qualifications in medicine and surgery before receiving a commission.

I beg leave now respectfully to request you will inform me what answer has been returned to my memorial.

I have, &c.
(Signed) ALEX. SOLOMON.

Dr. Gibson, C.B., Director General,
Medical Department.

War Office, 27th February 1861.

Sir,

WITH reference to your letter of the 12th instant, enclosing an application from Mr. A. Solomon to be permitted to attend the competitive examination for admission to the army medical service, I am directed by the Secretary of State for War to transmit

See page 5. for your information and guidance a copy of a letter which has been received in reply to the reference made to the India Office on this subject.

I have, &c.
(Signed) E. LUGARD.

The Director General
of the Army Medical Department,
&c. &c. &c.

(Medical.)

Army Medical Department,
5th March 1861.

THE Director General presents his compliments to Mr. Solomon, and with reference to previous correspondence trusts he will be able to make it convenient to call at this office to-morrow, at 2 P.M.

A. Solomon, Esq.,
8, Saville Row, Walworth Road.

(Medical, 18,858—286.)

Army Medical Department,
6th March 1861.

Sir,

In acknowledging the receipt of your letter of the 19th ultimo, I have the honour to inform you that, in consequence of the varied climates medical officers of Her Majesty's army have to encounter, it has been thought advisable (as will be seen on reference to the enclosed copy of a letter from the India Office) not to subject natives of India to the chances of service out of that country, and it has consequently been decided that native gentlemen should not be permitted to compete for appointments in the general military service. Should you wish to be employed in India, I would suggest that you apply direct to the Secretary of State for India.

India Office, 19/2/61.

Colonel Baker to Secretary for Military Correspondence, War Office.

I have, &c.
(Signed) J. B. GIBSON,
Director General.

A. Solomon, Esq.,
8, Saville Row, Walworth Road.

33, East Street, Lamb's Conduit Street, W.C.,
13th March 1861.

Sir,

I BEG leave respectfully to solicit your attention to the following representation.

I am a native of India, and a natural-born subject of Her Majesty. In 1849 I entered the Medical College of Bengal, and went through a regular course of medical study in that institution, during which I obtained two certificates of honour, and, after passing the prescribed examinations, received in 1854 the usual diploma, certifying my competency to practise the several branches of medicine.

My main inducement for taking this course was to qualify myself for a medical appointment in the Indian army, which, following the example of more than one of my countrymen, I hoped to obtain through the competitive examination for such appointments.

As, however, the means of defraying the expense of a voyage to England for that purpose were not at my command, I for the next few years did duty as sub-assistant surgeon, and added to my resources by private practice, which I cheerfully abandoned for a time during the exigency of the Indian mutiny, in order to do extra work as a public servant.

Having at length gathered sufficient funds, I proceeded to England, and arrived in London on the 24th January last, with the view of entering the competitive examination for an assistant surgeoncy in the Indian army. I did so in full reliance that the diploma of the Bengal College, conferred under the authority of Government, would now, as invariably heretofore, be accepted as sufficient qualification to admit me to the examination.

Having, however, learnt that the examination for India medical appointments had been recently merged in that conducted under the Medical Department of the British Army, I, on the 31st of January, applied to the Director General to be admitted to the examination next ensuing; but after encountering various objections made to my medical qualification, under the new arrangement, I finally received a letter from the Director General

(a copy

(a copy of which is enclosed) informing me that it "has been decided that native gentlemen should not be permitted to compete for appointments in the general medical service." With this letter was enclosed a copy of one from Colonel Baker, dated "India Office, 19th February," in which is the following passage: "The withdrawal of the privilege of competing for Indian medical appointments will no doubt cause disappointment to native medical students who were qualifying for such appointments, and Sir Charles Wood has impressed upon the Government of India the importance of endeavouring to provide suitable employment in India for such students."

The Director General was good enough to add, "should you wish to be employed in India, I would suggest that you apply direct to the Secretary of State for India."

To you, Sir, I now, therefore, most respectfully apply, not to remonstrate against the infliction of a disability, grievous and humiliating though it be on myself and my fellow countrymen, nor to urge my just complaint of the frustration of a cherished purpose, to attain which I have for years laboured in India, and now made the journey to England; but, seeing that I gave up the emoluments of practice, and incurred the expense of my voyage on the faith of existing regulations, and with no reason to anticipate disappointment from retrospective enactments, I trust your sense of justice and of the faith due to engagements will induce you to direct that I should receive pecuniary compensation for my expenses to England, and for my stay there, as well as for my passage home, and for the loss of the emoluments of private practice during my absence.

I have further to pray that you will be pleased to furnish me with such recommendation to the Government in India as may secure for me a public medical appointment in some degree commensurate with that which has now been placed beyond my reach.

Should it for this purpose be deemed expedient to subject me to an examination, absolute or competitive, I will most cheerfully subject myself thereto.

I have, &c.
(Signed) A. Solomon.

The Right Honourable Sir Charles Wood,
Secretary of State for India.

Sir, India Office, 21st March 1861.

I am directed by the Secretary of State for India in Council to acknowledge the receipt of your letter, dated 13th instant, detailing the circumstances under which you came to England, for the purpose of competing for a commission in the Indian medical service, stating the disappointment to which you have been subjected in having been refused permission to compete for the Medical Department of the British army, and requesting that you may be furnished with such recommendation to the Government of India as may secure for you a public medical appointment in some degree commensurate with that which has now been placed beyond your reach.

Sir C. Wood regrets that the changes lately determined upon in the organization of the Indian armies have prevented the fulfilment of your just expectations to be allowed to compete for a commission in the Indian Medical Department.

He has instructed the Government of India to take into early consideration the subject of the provision of suitable professional employment for native medical gentlemen; and in consideration of the expenses which you have incurred in coming to this country, and in qualifying yourself for the competitive examination, he is prepared to grant you a sum of 100*l.* on the production of a certificate from Sir J. R. Martin, examining physician, that you would have been qualified to compete at the examination for the Indian medical service under the old regulations, and to grant you 100*l.* in addition as soon as you have taken your passage to return to India.

I am, &c.
(Signed) W. E. Baker,
Colonel.

A. Solomon, Esq.

24, Mount Street, Grosvenor Square, 15th May 1861.

Certified that I have this day personally examined Mr. Alexander Solomon, as also the several documents relating to his medical studies and qualifications; and that Mr. Solomon would have been qualified to compete at the examination for the medical service of India, and under the old regulations.

(Signed) J. R. Martin.

£100, passed 15th May 1861.
£100, passage-money, paid 16th May 1861.

No. 10.

No. 10.

Correspondence relative to Mr. J. A. Greene.

Sir, India Office, S.W., 1st March 1861.

I am directed by the Secretary of State for India in Council to transmit, for the information of the Secretary of State for War, the enclosed memorial addressed to Sir Charles Wood by Mr. James A. Greene, late hospital steward in the Indian medical service, requesting to be permitted to compete for a commission at the examination for medical appointments to be held in July next.

A copy of correspondence received from the Government of India, narrating the circumstances under which Mr. Greene left India in January 1860, without awaiting the announcement of the leave for one year, which had been granted to him, is also forwarded. It will be seen that on the 31st December 1859 Mr. Greene applied for furlough to England for two years, with a view to qualify himself as a candidate at the competitive examination for Her Majesty's Indian medical service to be held in July 1861. The application obtained the favourable recommendation of the Director General, Medical Department, and on the 16th January 1860 a letter was addressed to Mr. Greene, to inform him that leave was granted to him for one year. Mr. Greene, however, had left Calcutta two days previously, and on the circumstances being reported to the Home Government, the Secretary of State for India informed the Government of India that Mr. Greene would not be admitted to compete for a commission in Her Majesty's Indian medical service, and that on his reporting himself at the India Office he would be directed to return forthwith to his duty, and should he fail to do so within one year he would be struck off the strength of the subordinate Medical Department.

In reply, the Government of India, under date 8th September last, observe, "we beg "to remark, in favour of this subordinate medical officer, that 12 months' leave without "pay was considered to have been granted to him, and that but for a reference respecting the nature of the leave, which delayed its publication, it would have been notified "in General Orders previous to his leaving India."

Mr. Greene states in his memorial, that fearing he would be dismissed for leaving India before his leave had received the sanction of the Government, he tendered his resignation of the service, and having subsequently been informed that he would not be admitted to compete for a commission, he now applies for a reconsideration of his case.

As there is no longer a separate examination for the Indian medical service, I am desired to transmit the application for the decision and orders of Lord Herbert.

I have, &c.
(Signed) W. E. Baker,
Colonel.

The Under Secretary of State for War.

Sir, War Office, 12th March 1861.

Enclosures returned.

I have laid before the Secretary of State for War Colonel Baker's letter of the 1st instant, together with its enclosures, in reference to the case of Mr. J. A. Greene, late hospital steward in the Indian medical service, who is desirous of being permitted to compete for a commission at the next examination for army medical appointments.

In reply, I am to request that you will acquaint Sir Charles Wood that it appears that Mr. Greene will in July next be nearly 28 years of age. He is, therefore, ineligible for an appointment to the army medical service, as by the regulations the age of admission is limited to 26.

I have, &c.
(Signed) E. Lugard.

The Under Secretary of State for India,
&c. &c. &c.

No. 11.

No. 11.

Correspondence relative to Mr. Lyons.

(18,858—317.)

16, Portugal Street, Lincoln's Inn Fields,
Sir, 30 March 1861.

The case of Dr. Thompson having thrown doubts upon the views of your office as to the eligibility of the sons of European parents, born and educated in India, to the medical

COPIES of all APPLICATIONS addressed by BRITISH SUBJECTS, born in *India*, to the Secretary of State for *India*, and to the Secretary of State for War, for permission to be allowed to compete, at public Examinations, for Employment in HER MAJESTY'S MILITARY MEDICAL SERVICE; of all REPLIES to such APPLICATIONS, and of all CORRESPONDENCE consequent thereon; of the OFFICIAL REPORTS of the MEDICAL OFFICERS appointed to examine the State of Health of the several Applicants; and of all REPORTS of MEDICAL BOARDS appointed to re-examine the several Applicants.

—No. 1.—

No. 1.
Correspondence.

CORRESPONDENCE relative to the general Question of admitting Natives of *India* to the Army Medical Service.

Army Medical Department,
24 November 1860.

Sir,

WITH reference to previous correspondence on the subject of the competitive examination of candidates for appointments in Her Majesty's British and Indian Medical Services, I have the honour to solicit the instructions of the Secretary of State for War, as to whether candidates above the age of 26, who state that they have been studying with a view to enter the Indian Medical Department, on he faith of the regulations of that service admitting gentlemen up to 28 years of age, may be allowed to compete at the next examination.

I beg to add, that I make this inquiry to enable me to answer numerous applications which I have received from gentlemen, who state that they are thus circumstanced.

I have, &c.
(signed) *J. R. Gibson,*
Director General.

The Secretary for Military Correspondence,
&c. &c. &c.
War Office, Pall Mall.

Sir,

War Office, 1 December 1860.

I HAVE laid before the Secretary of State for War your letter of the 24th instant, in which you inquire whether candidates for appointments in the Army Medical Service, who have been studying with a view to enter the Indian Medical Department, on the faith of regulations under which they could be admitted up to 28 years of age, may be allowed to compete at the next examination, though above the age of 26.

In reply I am to acquaint you, that under the circumstances, Mr. Secretary Herbert considers that the proposal is only fair and reasonable, and should be adopted.

I am, &c.
(signed) *De Grey and Ripon.*

The Director General,
Army Medical Department.

No. 1.
Correspondence.

Sir, War Office, 10 January 1861.

I AM directed by the Secretary of State for War to transmit to you for the consideration of Sir Charles Wood, the enclosed copy* of a letter from Mr. M. Beramjee, in reference to the application to natives of India of the regulation which requires that candidates for admission to the Army Medical Service shall not be married men.

* Letter of 30 November 1860, page 25.

This application has raised the more important question as to the rule which should be laid down in reference to the admission of natives of India to medical appointments with the army. They are clearly unsuited for general service, and ought therefore only to be allowed to compete for local appointments, and with native troops.

Mr. Herbert will be glad to be furnished with the opinion of Sir C. Wood on this subject, and at the same time to be informed whether any, and if so, what expectations have been held out to the students at the Medical College at Bombay of being admitted to the military medical service.

I have, &c.
(signed) *F. Paulet.*

H. Merivale, Esq., C.B.
&c. &c. &c.
India Office.

Sir, India Office, S.W., 19 January 1861.

I HAVE laid before the Secretary of State for India in Council Lord F. Paulet's letter, No. 7644—161, dated the 10th instant, enclosing a representation from a native of India regarding his exclusion as a married man from the competitive examination to the medical service of the British Army; and, with reference to the concluding paragraph of the letter above quoted, I am directed to observe that expectations of being admitted to the medical service of the Indian armies are held out to native medical students in the clauses of the Acts of Parliament named in the margin, and that since the passing of the Act of 1853, several natives have obtained commissions as assistant surgeons in Her Majesty's Indian service.

3 & 4 Will. 4, c. 85, sec. 86.
16 & 17 Vic., c. 95, sec. 37.

I am further directed to express Sir Charles Wood's concurrence in the opinion of Lord Herbert, that natives of India of native parentage, are unsuited for general service in the British Army, and to state that he could not recommend that they should be permitted to compete for assistant surgeoncies in that army.

The provision of suitable professional employment in India for native medical students who have qualified themselves to compete for appointments on the faith of the Acts of Parliament above quoted, will be the subject of separate and early consideration.

I have, &c.
(signed) *W. E. Baker,*
Colonel.

The Under Secretary of State,
War Office.

CIRCULAR Despatch to the Governments of India, Madras, and Bombay.

India Office, London, 16 February 1861.

1. THE Secretary of State for War has transmitted to me a representation from Mr. M. Beramjee, a native of Bombay, in reference to the application to natives of India of the regulation which requires that candidates for admission to the Army Medical Service shall not be married men.

2. Expectations of being admitted to the medical service of the Indian armies were held out to native medical students in the clauses of the Acts of Parliament, noted in the margin, and since the passing of those Acts, several natives have obtained commissions as assistant surgeons in Her Majesty's Indian service. Examinations for such appointments have now ceased.

3 & 4 Will. 4, c. 85, sec. 86.
16 & 17 Vic., c. 95, sec. 37.

3. Mr. Beramjee, who represents that he left India with the special object of qualifying himself to compete for admission into the Indian Medical Service, prays that the regulation above referred to may not be enforced in his case, and that

that he may be permitted to be examined for a medical appointment. The Secretary of State for War considers natives of India of native parentage, unsuited for general service in the British army. In this opinion I have expressed my concurrence.

4. I am desirous that the principals of the several medical colleges in India should be informed of the decision now communicated to you.

5. The withdrawal of the privilege of competing for military medical appointments will, no doubt, cause disappointment to native medical students, who are qualifying themselves to compete for appointments on the faith of Acts of Parliament as above quoted.

I should wish the subject of the provision of other suitable professional employment in India for such students, to engage your early consideration.

I have &c.
(signed) *C. Wood.*

Sir, India Office, 19 February 1861.

I AM directed by the Secretary of State for India in Council to acknowledge the receipt of your letter, dated 18th instant,* and to observe, with reference to the inquiry made therein, that my letter dated 19th January last, informed you that Sir Charles Wood concurred in the opinion expressed by Lord Herbert, that natives of India of native parentage are unsuited for general service in the British army.

* Page 41.

Under the late Act of the Legislature, no fresh appointments will be made of assistant surgeons to Her Majesty's Indian forces. The withdrawal of the privilege of competing for military medical appointments will, no doubt, cause disappointment to native medical students who were qualifying for such appointments; and Sir Charles Wood has impressed on the Government of India the importance of endeavouring to provide suitable employment in India for such students.

The enclosure to your letter is herewith returned.

I have, &c.
(signed) *W. E. Baker*, Colonel.

The Secretary for Military Correspondence,
War Office.

Sir, War Office, 2 March 1861.

HER Majesty's Government have come to the conclusion, as you are probably aware, that natives of India, born of native parents, are not constitutionally fit for general service in the army medical profession; but among the candidates who have not been allowed to compete at the recent examination for such appointments, as falling within the above definition, there are some few gentlemen whose rejection would seem to Lord Herbert open to considerable doubt.

It has occurred to his Lordship that the most satisfactory arrangement which will admit of being adopted, with a view to a solution of the difficulty, will be that a conference should be held between yourself, Sir Ranald Martin, examining Physician to the Secretary of State for India in Council, and the Director General of the Army Medical Department, at the office of the latter, to which the gentlemen in question should be summoned; and that you should consider and report your joint opinion whether they are physically qualified to stand the exposure to the various climates in which they would be required to serve.

If you will be good enough to undertake this duty, Lord Herbert would request you to communicate with Dr. Gibson as to the day and hour when it would be convenient to you to attend.

I have, &c.
(signed) *T. G. Baring.*

Sir John Liddell,
&c. &c. &c.

No. 1.
Correspondence.

Sir, War Office, 2 March 1861.

HER Majesty's Government have come to the conclusion, as you are probably aware, that natives of India, born of native parents, are not constitutionally fit for general service in the army medical profession; but among the candidates who have not been allowed to compete at the recent examination for such appointments, as falling within the above definition, there are some few gentlemen whose rejection would seem to Lord Herbert open to considerable doubt.

It has occurred to his Lordship that the most satisfactory arrangement which will admit of being adopted with a view to a solution of the difficulty, will be that a conference should be held between yourself, Sir John Liddell, and the Director General of the Army Medical Department, at the office of the latter, to which the gentlemen in question should be summoned; and that you should consider and report your joint opinion whether they are physically qualified to stand the exposure to the various climates in which they would be required to serve.

If you will be good enough to undertake this duty, Lord Herbert would request you to communicate with Dr. Gibson as to the day and hour when it would be convenient to you to attend.

I have, &c.
(signed) *T. G. Baring.*

Sir Ranald Martin,
&c. &c. &c.

Sir, Admiralty, W. C., 4 March 1861.

WITH reference to your letter of the 2d instant, relative to a joint report being made by myself, Sir Ranald Martin, and Director General of the Army Medical Department, as to whether certain candidates for the army medical profession, who are natives of India, and born of native parents, are physically qualified to stand the exposure of the various climates in which they will be required to serve, I beg to acquaint you, for the information of Lord Herbert, that I have written to Dr. Gibson to appoint two o'clock on Wednesday next for meeting him at his office to examine the candidates in question.

I have, &c.
(signed) *J. Liddell,*
Director General, &c.

T. G. Baring, Esq., M.P.
Under Secretary of State for War.

Sir, War Office, 19 March 1861.

WITH reference to the correspondence which has passed respecting the admission of natives of India for general service in the army medical profession, I am directed to acquaint you, for the information of Sir Charles Wood, that among the candidates who have not been allowed to compete at the recent examination for such appointments, there were some gentlemen whose rejection seemed to Lord Herbert open to considerable doubt.

Under these circumstances Lord Herbert deemed it advisable that the gentlemen in question should be summoned before a Board, with a view to an inquiry as to whether they were constitutionally unfit to withstand the various climates in which they would be required to serve; and I am to enclose, for Sir Charles Wood's information, a copy of the report* which has been made by the officers composing the Board.

* No. 16, Correspondence, page 50.

I have, &c.
(signed) *E. Lugard.*

The Under Secretary of State for India.

No. 2.
Correspondence

Dr.
D. R. Thompson

— No. 2. —

CORRESPONDENCE relative to Dr. *D. R. Thompson.*

18,858—190.

50, Jewin-street, Aldersgate-street,
16 November 1860.

Sir,

I BEG to solicit the favour of your attention to my request for permission to be examined for an assistant surgeonship in the Indian army, although my qualifications are not within the rules recently laid down for the admission of candidates thereto.

I was born in India, and am 27 years of age; I was educated at the Madras Medical College, and obtained my certificate of qualification there in 1855; from that time until the beginning of this year I was employed at Rangoon. I came over to England in April last, and obtained by examination the degree of doctor in medicine at St. Andrew's University in Scotland, on the 27th of September last. I have been recently informed that candidates will not be allowed to present themselves for examination who are above 26 years of age, and who are not possessed of a double qualification. I am desirous of presenting myself for examination in February next, and should feel thankful if I might, under the circumstances, be allowed to be then examined, for otherwise my prospects of advancement in Her Majesty's service in India will be quite destroyed. In consequence of the mutinies in India I was unable to obtain leave of absence to come over here and present myself for examination, and ultimately I was obliged to purchase my resignation at a considerable sum of money. I can produce at your pleasure all my certificates in India, and also my diploma, obtained in Scotland.

I have, &c.
(signed) *D. R. Thompson.*

The Director General, Medical Department.

No. 18,858—190.

Army Medical Department, 7 December 1860.

Sir,

IN forwarding the enclosed form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department" in the left hand corner.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

Dr. R. Thompson, Esq.,
50, Jewin-street, Aldersgate-street, E. C.

P.S.—There will not in future be any appointments made for special service in India, but the Secretary of State for War will permit any gentleman under 28 years of age who has been studying for the Indian medical service, to compete at the next examination for appointments in the Medical Department, provided he has the qualifications otherwise required.

18,858—190, A.

50, Jewin-street, Aldersgate,
10 December 1860, E.C.

Sir,

I BEG to acknowledge the receipt of your favour of date 7th December 1860, No. 18,858—190, and to return the enclosed form, filled up as requested, and with it a copy of the certificate of medical education, which I received from the Madras Medical College, for your kind consideration.

I have, &c.
(signed) *D. R. Thompson.*

To the Director General,
Army Medical Department.

No. 2.
Correspondence.

Dr.
D. R. Thompson.

QUALIFICATIONS and EXAMINATION of Candidates for Commissions in the Army Medical Service.

1. EVERY candidate presenting himself for admission to the competitive examination required for the Army Medical Service, must be unmarried. He must produce a birth-certificate from the district registrar, or a certificate of baptism in which the date of birth is stated; or, if neither of these can be obtained, an affidavit from one of the parents or from some other near relative who can attest the date of birth, will be accepted. The certificate or affidavit must show that the candidate is not above 26 nor under 21 years of age. He must also produce certificates of moral conduct and character, one of them from the parochial minister, if possible.

2. The candidate must make a declaration that he labours under no mental or constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate. He must also attest his readiness to engage for general service immediately on being gazetted.

3. The candidate must possess a diploma in surgery, or a license to practise it, from the Royal College of Surgeons of England, Scotland, or Ireland, or from the Faculty of Physicians and Surgeons of Glasgow, or from some other corporate body legally entitled to grant a diploma in surgery, or a license to practise it. He must besides, and in addition to such diploma or license, possess a degree in medicine, or other legal qualification to practise medicine in Great Britain or Ireland.

4. Degrees, diplomas, licenses, and certificates of age and character must be lodged at the Army Medical Department for examination and registry, at least one week before the candidate appears for examination.

5. On producing the foregoing qualifications the candidate will be examined by the Examining Board, on the following subjects:—

Anatomy and physiology.
Surgery.
Medicine, including therapeutics, the diseases of women and children, chemistry, and pharmacy. (The examination in medicine and surgery will be, in part, practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of medical and surgical patients at the bedside.)
Comparative anatomy, zoology, and botany, with especial reference to Materia Medica.

The subjects for this part of the examination will be taken from the following books:—

(1.) "Animal Kingdom," by W. S. Dallas, F.L.S.
(2.) "Outlines of the Structure and Functions of the Animal Kingdom," by Rymer Jones; or "Cours Elémentaire d'Histoire Naturelle," par Milne Edwards.
(3.) Lindley's "School Botany," Lindley's "Medical and Economic Botany," Henfrey's "Elementary Course of Botany."

Candidates who may desire it, may be examined in the elements of physics and in physical geography. The following books are recommended for this purpose:—

(1.) "Elements of Natural Philosophy," by Golding Bird and C. Brooks.
(2.) "Physical Geography," by Mrs. Somerville.

6. The names of candidates who pass the preliminary examination of the Examining Board will be sent to the Director General, and communicated to the Professors of the Army Medical School. The names will be arranged in the following classes:—

Class I.

Names of those who have passed a pre-eminently distinguished examination, arranged in their order of merit.	Characters which distinguish the excellence of each. Fitness for special service.

Class II.

Names of those who have passed a creditable examination, arranged in alphabetical order.	Statement of the topics in which each has individually excelled or fallen short.

Class III.

Names of candidates who have passed the minimum examination, arranged in alphabetical order.	Statement of the particular branches of science in which each has been found to be deficient.

This information will enable the Professors of the Army Medical School to carry out their instructions with a definite aim as regards each class.

7. After

7. After passing his preliminary examination, every candidate will be required to attend one entire course of practical instruction at the army medical school, before being admitted to his examination for a commission, on,—

(1.) Hygiene.
(2.) Clinical and military medicine.
(3.) Clinical and military surgery.
(4.) Pathology of diseases and injuries incident to military service.

These courses to be of not less than four months' duration.

8. At their conclusion, the candidate will be reqr de to pass an examination on th subjects taught in the school. The examination will be conducted by the professors of the school.

The Director General, or any medical officer deputed by him, may be present and take part in the examination. If the candidate give satisfactory evidence of being qualified for the practical duties of an army medical officer, he will be eligible for a commission as assistant surgeon.

9. During the period of his residence at the Army Medical School, each candidate will receive an allowance of 5 *s.* per diem, with quarters; or 7 *s.* per diem, without quarters, to cover all costs of maintenance; and he will be required to provide himself with uniform (viz., the regulation undress uniform of an assistant surgeon, but without the sword).

10. All candidates will be required to conform to such rules of discipline as the Senate may, from time to time, enact.

RULES for the Examination of Assistant Surgeons previous to Promotion.

THIS examination is intended as a test for promotion, and may be taken at any time after the Assistant Surgeon has served five or more years.

When Assistant Surgeons have served the requisite time, they will be examined in the following manner:—

A series of printed questions, prepared by the Examining Board, will be sealed and sent by the Director General to the principal medical officers of stations where Assistant Surgeons may be eligible for examination. It will be the duty of the principal medical officer of the station to deliver these sealed questions to the Assistant Surgeons, and to see that they are answered without the assistance of books, notes, or communication with any other person. The answers are to be signed, and delivered sealed, to the principal medical officer, who is to send them, unopened, to the Director General, together with a certificate from the surgeon of the regiment, or other superior medical officer, that the Assistant Surgeon has availed himself of every opportunity of practising surgical operations on the dead body.*

The Assistant Surgeon will also be required to transmit, together with his answers to the Director General, a medico-topographical account of the station where he may happen to be at the time, or of some other station where he may have been resident sufficiently long to enable him to collect the necessary information for such a report. Failing this, he will send a medico-statistical report of his regiment for a period of at least 12 months.

If the Examining Board is satisfied with the replies to the questions, and the Director General is satisfied with the certificates and with the medico-topographical or statistical report, the Assistant Surgeon will be held qualified for promotion.

The Assistant Surgeon will thus be subjected to three separate examinations within the first 10 years of his service, each examination having a definite object. The first, to ascertain, previous to his admission into the service as a candidate, his scientific and professional education, and to test his acquirements in the various branches of professional knowledge. The second, after having passed through a course of special instruction in the Army Medical School, to test his knowledge of the special duties of an army medical officer; and the third, previous to his promotion, to ascertain that he has kept pace with the progress of medical science.

* The Assistant Surgeon may see this certificate before it is sent to the Director General.

War Office, 24 March 1860.

SCHEDULE of QUALIFICATIONS.

I, DANIEL ROBERT THOMPSON, 27 years of age in May last, a candidate for employment in the Medical Department of the Army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am unmarried, and that I labour under no mental nor constitutional

 disease,

No. 2. Correspondence. — Dr. D. R. Thompson.

disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have the degree of M.D. from the University of St. Andrews, dated 28 September 1860.

(signed) *Daniel Robert Thompson*, M.D.

50, Jewin-street, Aldersgate-street, E.C.,
10 December 1860.

MADRAS MEDICAL COLLEGE.

I DO hereby certify that Mr. D. R. Thompson received the following courses of instruction at this institution during the Sessions 1851-52, 1852-53, 1853-54, 1854-55.

Session 1851-52.

Anatomy	Dr. G. Smith.
Chemistry	Mr. J. E. Mayer.
Botany	Mr. J. E. Mayer.
Anatomical Demonstrations and Dissections	Dr. G. Smith.

Session 1852-53.

Anatomy	Dr. G. Smith.
Physiology	Dr. G. Smith.
Materia Medica	Dr. H. F. C. Cleghorn.
Theory and Practice of Surgery	Mr. A. Blacklock.
Theory and Practice of Medicine	Dr. J. Arther.
Dissections, Demonstrations	Six months.

Session 1853-54.

Theory and Practice of Medicine	Dr. W. Evans.
Theory and Practice of Surgery	Mr. A. Blacklock.
Clinical Medicine	Dr. W. Evans.
Clinical Surgery	Mr. A. Blacklock.
Midwifery, and Diseases of Women and Children	Mr. J. Shaw, F.R.C.S.
Diseases of the Eye	Mr. J. Shaw, F.R.C.S.
Dissections, Demonstrations	Six months.

Session 1854-55.

Theory and Practice of Medicine	Dr. W. Evans.
Clinical Medicine	Dr. W. Evans.
Clinical Surgery	Mr. A. Blacklock.
Medical Jurisprudence	Mr. J. Shaw, F.R.C.S.
Diseases of the Eye	Mr. J. Shaw, F.R.C.S.
Midwifery and Diseases of Women and Children	Mr. J. Shaw, F.R.C.S.
Operative Surgery	Mr. A. Blacklock.
Laboratory Practice	Mr. J. E. Mayer.

Hospital Practices.

Surgical ward from August to October 1853, and December 1854 to April 1855.
Medical ward from November 1853 to June 1854.
Eye Infirmary and Lying-in-hospital, July 1854 to November 1854.
Dispensaries, sessions 1851-52.

(signed) *J. Shaw*, F.R.C.S.,
Principal Madras Medical College.

Madras Medical College,
23 July 1860.

Each session occupying nine months.

Army Medical Department,
14 December 1860.

Sir,

IN acknowledging the receipt of your letter of the 10th instant, enclosing a schedule of your professional education, I have the honour to acquaint you, that by the Royal Warrant of the 13th January 1860, regulating the admission of medical officers to the Indian military forces, it is laid down that a candidate must possess both a medical and surgical qualification before he can be admitted to the competitive examination for a commission: and it will be equally necessary for you to obtain a diploma or license to practise surgery in addition to your degree in medicine, before your name can be placed on the list of candidates for general service, for the examination which will take place in February 1861, the

Secretary

Secretary of State for War having sanctioned any gentleman under 28 years of age, who has been studying for the Indian medical service, to compete at the next examination for appointments in the medical department of the army, provided he has the qualifications otherwise required.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

Dr. D. R. Thompson,
50, Jewin-street, Aldersgate-street.

(18,858—190 B.)

Sir, 59, Euston-square, 6 February 1861.

In accordance to your letter, No. 18,858—184 B., dated 14 December 1860, I have the honour to inform you, that I have obtained the diploma in surgery therein required, and beg you will be good enough to place my name on the list of candidates for general service for the next examination.

I have, &c.
(signed) *D. R. Thompson,* M.D.

J. Gibson, Esq.,
Director General Army Medical Department.

(18,858—190 B.)

Army Medical Department,
Sir, 7 February 1861.

In acknowledging the receipt of your letter of the 6th instant, I have the honour to inform you, that the next competitive examination will take place at Chelsea Hospital, on Monday the 18th instant, at ten o'clock a. m.

You will therefore be pleased to attend at this office, on Tuesday the 12th instant, between the hours of 11 and 3 o'clock, bringing with you your degrees, diplomas, licenses, certificates of age and moral character, and letter of recommendation for examination and registry.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

Dr. D. R. Thompson,
59, Euston-square, N. W.

(18,858—190 C.)

Daniel Robert Thompson, M. D. (St. Andrew's), aged 27.

I certify that this gentleman's degree, diploma and certificates are in conformity with the regulations (for the India Medical Service).

Certificate of age herewith.

(signed) *J. G. FitzGerald,*
Staff Surgeon.

Army Medical Department,
12 February 1861.

(18,858—190 C.)

Daniel Robert, son of Robert Thompson, Bombardier Horse Artillery, and Catherine his wife, Indo-Briton, born May 14, 1833; was baptised July 8, 1833, by

(signed) *C. Jeaffreson,* Chaplain.

The above is a true extract, taken from the register of baptisms kept at this chaplaincy, as examined by me.

(signed) *John M'Evoy,* M. A.
Honourable Company's Chaplain,
District of Nagpore.

Kamptee, 15 May 1848.

No. 2. Correspondence. Dr. D. R. Thompson.

I HAVE pleasure in certifying, as regards Mr. D. R. Thompson, late an assistant apothecary in Her Majesty's East Indian Service, who has purchased his discharge, that during his service under my supervision, very nearly three years, he has shown considerable professional ability, has always been attentive to his duties, and his conduct in every respect satisfactory.

(signed) *H. Graham*, Madras Medical Establishment.
Superintending Surgeon.

Rangoon, 31 January 1860.

Pegu Division.

London, 12 May 1860.

I HAVE much pleasure in certifying that I have known Mr. D. R. Thompson since the year 1853. He was then a student and did duty under me in India for some time. I consider him to be a gentleman of good moral character, and superior medical attainments as a student. He evinced the greatest zeal and attention to his studies, and was always desirous of embracing every opportunity of furthering his knowledge in medicine and surgery.

(signed) *J. Shortt*, M. D., M. R. C. P. L., F. L. S.
Assistant Surgeon Madras Army.

I HEREBY certify that the foregoing certificates are correct copies of the originals in the possession of this college.

(signed) *Edm. Belfour*,
Secretary.

Royal College Surgeons of England,
4 February 1861.

Army Medical Department,
16 February 1861.

Sir,

ADVERTING to previous correspondence, I have now the honour to request you will call upon me at this office, on Monday morning next, the 18th instant, instead of attending at Chelsea Hospital.

I have, &c.
(signed) *J. B. Gibson*,
Director General.

D. R. Thompson, Esq., M. D.,
59, Euston Square.

(18,858—190.)

Army Medical Department,
5 March 1861.

Sir,

THE Secretary of State for War having appointed a Board, consisting of Sir R. Martin, Sir John Liddell, and myself, to furnish a report as to your fitness physically, for employment in the Army Medical Department, I have the honour to hope you will be able to make it convenient to attend at this office, at 2 p.m., to-morrow.

I have, &c.
(signed) *J. B. Gibson*,
Director General.

Dr. D. R. Thompson,
50, Jewin Street, E.C.

(18,858—190 A.)

Army Medical Department,
6 March 1861.

Sir,

THE Secretary of State for War having appointed a Board, consisting of Sir R. Martin, Sir John Liddell, and myself, to furnish a report as to your fitness physically for appointment to the Army Medical Department, I have the honour to hope you will be able to make it convenient to attend at this office, on Friday next, the 8th instant, at 2 o'clock, p. m.

I have, &c.
(signed) *J. B. Gibson*,
Director General.

D. R. Thompson, Esq.,
59, Euston Square, N. W.

No. 2.
Correspondence.
Dr.
D. R. Thompson.

97, Marylebone Road,
9 April 1861.

Sir,

On the faith of the 87th section of the Act 3 & 4 William 4, c. 85, and the Queen's Gracious Proclamation, of August 1858, I left India on the 3d February, and arrived in England in April 1860. I held the office of apothecary in the Madras Army, and it fell to me to be left in charge of the Native Detail Hospital, at Rangoon, for the years 1857, 1858, and 1859; but as the office did not hold out any prospect of bettering my condition, or of my rising to distinction, I saved what little I could from my pay to enable me to prosecute my medical studies in Great Britain.

I studied at St. Andrew's, and obtained from the University of St. Andrew's, in Scotland, the degree of M. D. in Medicine, and subsequently having passed the new and severe examination of the Royal College of Surgeons, in London, I obtained the diploma of surgery.

The usual official public notification in the press having informed me of an open competition on the 18th February, for the office of assistant surgeon in Her Majesty's service, for all Her Majesty's subjects, duly qualified, I notified to Dr. Gibson, Director General of the Army Medical Department, my intention to compete for an assistant surgeoncy; and having been duly examined by Dr. White, the official examiner, with respect to the soundness of my constitution, and goodness of my general health, Dr. Gibson appointed me to attend the competitive examination on the 18th February, and I accordingly attended; but on the morning of the day was told by Dr. Gibson that as appointments were no longer to be made for the medical service of India, I could not be allowed to compete, because from my being born in India, my health would break down in case I was sent to serve in rigid climates. My reply was, that my health was perfectly good, and that I was quite willing to serve in any part of the world; and that, after having come to England to win a commission in Her Majesty's service, exhausting my slender means in the attempt, it would be very hard upon me to have my hopes blighted; nevertheless, Dr. Gibson refused to permit me to compete. Since that date I have been called before a Medical Board, consisting of Drs. Gibson, Sir John Liddell, and Sir R. Martin, on the 8th March, to examine my state of health, and I have reason to believe the Board must have been satisfied with it; but since that period I have not had any communication from the War Office respecting the claim which I respectfully prefer to be allowed to compete for a commission in Her Majesty's medical service. Since being examined by the Medical Board, I have obtained the honour of being appointed a licentiate of midwifery by the Royal College of Surgeons.

As my original slender means are being rapidly exhausted, I trust the Secretary of State for War will give me an early opportunity of realizing the object of my ambition.

I have, &c.
(signed) *D. R. Thompson*, M. D.

T. G. Baring, Esq., M. P.,
Under Secretary of State for War.

War Office, 13 April 1861.

Sir,

I have laid before the Secretary of State for War your letter of the 9th instant, in which you remonstrate against the decision not to permit you to compete for an appointment in the Army Medical Service.

In reply, I am to acquaint you that Lord Herbert regrets that the opinion of the Board of Medical Officers, by whom you were examined, was to the effect that you are constitutionally unfit for employment in the various northern climates in which the British army is called upon to serve.

I am to add, that a copy of the report of the Medical Board having been forwarded to the Secretary of State for India, Lord Herbert presumed that the result would have been communicated to you from the India Office.

I have, &c.
(signed) *E. Lugard.*

D. R. Thompson, Esq., M.D.
&c. &c. &c.

No. 2
Correspondence.

Dr.
D. R. Thompson.

Sir, 97, Marylebone-road, 17 April 1861.

I HAVE received with surprise and mortification your letter of the 13th of April, stating that, in the opinion of a Board of Medical Officers, I was constitutionally unfit for employment in the various northern climates in which the British army is called upon to serve. I have now been more than one year in England, exposed to the severest winter almost known, and I have never been ill for a single day.

Under the most trying circumstances of a pestilential climate in Burmah I constantly preserved my health, and was never absent from hospital duties for a day; moreover, previously to my examination by the Medical Board, Dr. White, the Government examiner, had pronounced me physically eligible to compete. I respectfully beg, therefore, to ask in what way I am constitutionally unfitted to be employed in northern climates; and I must appeal against the decision of a medical opinion which I feel is not founded on fact, and I am quite willing to submit myself to examination by medical men attached to Life Insurance Offices. I cannot believe that I am to be deprived of the rights of a British subject guaranteed by Acts of Parliament, Her Majesty's gracious proclamation of August 1858, and the recent declaration of the Prime Minister in the House of Commons, because I was born in India, and with a bare shade of native blood inherited from one parent; but I have reason to fear that such is the fact, as I have seen a letter addressed by Dr. Gibson, Director General of the Army Medical Department, to Mr. W. Lyons, who was born in India, and now studying for a commission in the Army Medical Service, stating that he will only be eligible to attend the next competitive examination for appointment in the Medical Department of the Army in case both his parents are Europeans.

I have, &c.
(signed) *D. R. Thompson*, M.D.

Sir E. Lugard, K.C.B.,
Major General.

Sir, War Office, 27 April 1861.

I HAVE laid before the Secretary of State for War your letter of the 17th instant, in which you urge a reconsideration of the decision by which you are debarred from entering the Army Medical Service.

In reply, I am to acquaint you, that the officers composing the Medical Board by which you were examined, were selected as being specially qualified from their knowledge and experience, to advise the Secretary of State as to whether you and others similarly situated, were constitutionally capable of serving for any length of time in northern climates; and Lord Herbert, much as he regrets the disappointment which the decision has occasioned you, feels bound to give effect to the opinion which he has received from those officers on the subject.

I am, &c.
(signed) *Ed. Lugard.*

D. R. Thompson, Esq., M.D.

— No. 3. —

No. 3.
Correspondence.

Mr. D. Picachy.

CORRESPONDENCE relative to Mr. *D. Picachy.*

(18,858—183.)

No. 54, Bernard-street, Russell Square,
12 November 1860.

Sir,

WITH reference to a notification in to-day's "Times," I beg the favour of you letting me know if the candidates for the Indian Medical Service are to conform to the same rules as those for the Home Service, or if they will be allowed to present themselves under the old rules of the Indian service.

I remain, &c.
(signed) *D. Picachy.*

To the Secretary, Medical Department,
War Office.

No. 3.
Correspondence.

Mr. D. Picachy.

Army Medical Department,
20 November 1860.

Sir,

In reply to your note of the 12th instant, relative to the Indian medical examination, I have the honour to acquaint you that the subject is at present under the consideration of the Secretary of State for War, and as soon as I receive hisdecision you will be duly informed.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

D. Picachy, Esq.,
54, Bernard-street, Russell Square, W. C.

(18,858—183 A.)

No. 54, Bernard-street, Russell Square,
20 November 1860.

Sir,

It being notified that no separate examination is to take place next January for the Indian Medical Service, and presuming, therefore, that all competitors will be required to conform to the rules now applicable for admission into Her Majesty's British Medical Staff, I beg respectfully to lay the following circumstances of my case before you.

I am a British-born subject and graduated at the Medical College in Calcutta, but since then, obtained my degree from the Royal College of Surgeons here. I held an uncovenanted appointment under the East India Company for upwards of six years, which I resigned after the late mutiny, for the express purpose of coming to England for this competitive examination, and being eligible for it, particularly in reference to qualifications and age, according to the regulations hitherto in operation.

I am now, however, 27 years old, and would deem it a great hardship indeed, after the heavy pecuniary expenses I have incurred, and the preparation I have been making for some time past, to be precluded from competing at the ensuing term, owing to changes in the regulations which I could not have anticipated.

Venturing, therefore, to solicit your kind and favourable consideration to this my representation, and begging to be allowed to enter upon the ensuing competition,—

I beg, &c.
(signed) *D. Picachy.*

To Dr. J. B. Gibson, C.B.,
Director General Army Medical Department.

(18,858—183.)

Army Medical Department,
7 December 1860.

Sir,

In forwarding the enclosed Form, I have the honour to request that you will be pleased to fill up the blanks thereof, so far as your education has proceeded, and immediately return the same to me, with a letter from yourself, addressed outside to the Under Secretary of State for War, War Office, Pall Mall, with the words "Medical Department," in the left hand corner.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

D. Picachy, Esq.
54, Bernard-street, Russell Square, W.C.

P. S.—There will not in future be any appointments made for special service in India, but the Secretary of State for War will permit any gentleman under 28 years of age, who has been studying for the Indian Medical Service, to compete at the next examination for appointments in the Medical Department, provided he has the qualifications otherwise required.

No. 3.
Correspondence.

Mr. D. Picachy.

(18,858—183 B.)

To Dr. *J. R. Gibson*, Director General, Army Medical Department.

Sir,

In reply to your letter, No. 18,858—183, of the 7th instant, I beg to return the schedule therewith sent, filled up as far as I am able at present.

I have, in addition, my certificates from the Medical College of Bengal, and am at present attending King's College.

I have, &c.
(signed) *D. Picachy.*

Qualifications and Examination of Candidates for Commissions in the Army Medical Service.

For particulars, see case of Dr. Thompson, page 8.

(18,858—183 B.)

Schedule of Qualifications.

Recommended by John A. Power, L. M., Cantab., M. R. C. P., Lond.

I, David Picachy, twenty-seven (27) years of age, in March last, a candidate for employment in the Medical Department of the Army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am unmarried, and that I labour under no mental nor constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

I have a diploma in surgery from the Royal College of Surgeons of England, dated 26th October 1855.

54, Bernard-street, Russell-square, W. C.
10 December 1860.

(signed) *David Picachy.*

Sir, Army Medical Department, 14 December 1860.

In acknowledging the receipt of your letter of the 10th instant, enclosing a schedule of your professional education, I have the honour to acquaint you that by the Royal Warrant of the 13th January 1860, regulating the admission of medical officers to the Indian Military Forces, it is laid down that a candidate must possess both a medical and surgical qualification before he can be admitted to the competitive examination for a commission, and it will be equally necessary for you to obtain a degree in medicine, or license to practise it, in addition to your diploma in surgery, before your name can be placed on the list of candidates for general service, for the examination which will take place in February 1861 ; the Secretary of State for War having sanctioned any gentleman under 28 years of age, who has been studying for the Indian Medical Service, to compete at the next examination for appointments in the Medical Department of the Army, provided he has the qualifications otherwise requird.

I have, &c.
(signed) *J. B. Gibson,*
Director General.

D. Picachy, Esq,
54, Bernard-street, Russell-square.

To the Secretary of State for War, Pall Mall.

Sir,

In consequence of a very recent order by which persons of a mixed European and native parentage, like myself, are precluded from entering the Army Medical Service, I beg to lay the following circumstances of my case before you, in the hope that the boon of compensation which has been granted to some may likewise be extended to me.

I was

hospital. The deaths during the year were 16, of which 13 were from cholera, and one from fever. The first case of cholera in the province was in a person recently arrived from Bombay, and residing in the Native Infantry lines. The disease spread with rapidity. The regiment was removed from the cantonment to tents.

Hydrabad.—The Sudur Bazar was several times complained of as filthy. The regimental latrines were improved. An old bazar, which was before the hospital, was removed.

The average strength was 743, and 2·3 per mille were sick in hospital daily. Three died, which was at the rate of 4 per mille, and one of those deaths was from cholera.

Jacobabad.—When the station was first formed, water was scanty and bad, and was found only at a great depth. Now water flows from the the Indus by canals during the inundation, and the whole cantonment is intersected with water-courses. The ground is becoming more fully charged with moisture, and at a spot where formerly water was not found at a depth of 35 feet, it was found last year at 20 feet from the surface. The cantonment is thickly wooded with large trees.

The old outposts having become untenable during the inundation, new posts were occupied, and at first the men had great exposure to vicissitudes of climate, and had water of bad quality until proper wells were made.

In the hospital of the Sind Horse there was ample accommodation under the system followed of treating all, except serious cases, as out-patients. For the Rifle Regiment, its hospital was insufficient during the sickly season.

The force during the year was 2,237 strong; the sick in hospital 89, or 39 per mille. There were 643 in a thousand admitted for fever, and four men died of it, or in the ratio of 1·8 of strength. One died of hepatic disease, and one of scurvy.

BELGAUM BRIGADE.

Kolhapoor.—The supply of water was scanty in the hot season.

The strength of the troops was 605, and the daily sick were in the proportion of 38 in a thousand. The admissions were 461·2 to strength, and the deaths 21·5. One death was from cholera, one from fever, four from dysentery and diarrhœa. One man, out of two admitted, died of scurvy.

Kuludghee.—The mean strength present was 370; the ratio of daily sick 48 per mille. Two men died, one of them from cholera.

Belgaum.—The surface drains were deepened with advantage. One of the regiments completed new lines for one of its wings; the plinths are a foot and a-half high; each private has a floor superficies of ten feet by nine.

Latrines for one of the regiments were still wanting.

The average strength was 1,275, of which 36 per mille were in hospital. There were 10 deaths, three of them from fever, and three from hepatic disease. There was no admission for cholera.

Dharwar.—There were 21 always in hospital, out of a mean strength of 706, or at the rate of 29 in a thousand. There were eight deaths, of which one was caused by cholera and one by dysentery. There were no deaths from fever. Two died from enthetic disease.

BOMBAY BRIGADE.

Bombay.—The old Marine Battalion lines and the Boree Bunder lines are both in unhealthy neighbourhoods. The cost of maintaining their families, owing to the high prices in Bombay, is thought to be the occasion of the prevalence of scurvy. The strength of the two regiments was 1,690; the daily sick amounted to 90, or 53 per mille. The deaths were 66, or 39 per mille of strength. Of these, 14 men died of cholera, 23 of fever, four of dysentery and diarrhœa, and nine of scurvy; there were 97 admissions for this disease.

Tana.—The lines are old, confined, and badly situated, on low ground, having a gentle slope towards a tidal creek which is only a few yards from the lines,

and presents a large surface of mud at low tide. The drains are open and fall into the creek, and its margin is the common resort of the men and their families, there being no privies.

The detachment was furnished by one of the Poona regiments; it had an average strength of 327, and had eight daily sick. Its duties were said to be severe. There were two deaths, of which one was from cholera. The fever admissions were 468 per mille; for dysentery and diarrhœa together they were about 150.

ADEN BRIGADE.

Aden.—New lines for the regiment of Native Infantry were completed. The site at the Isthmus, where the Native Artillery were located, was only 18 inches above high water, and was damp. The Sappers and Miners were mostly encamped where their services were required.

The average strength during the year was 962, of which 66 per mille were in hospital. The ratio of admissions to strength was 1140·3, of deaths it was 20·8. Five died of cholera, one of fever, two of diarrhœa, two of enthetic disease. There were 119 admissions and five deaths from scurvy. Scurvy has been the cause of great sickness since the station was first occupied, and many labourers on the public works have lost their lives by it. It has already been mentioned that an addition has been made to the articles composing the rations issued by the Commissariat. The severest cases of scurvy are said to be among the men returned from detachment at Perim.

The Perim detachment consisted of 75 men, and it was relieved every two months. The deaths on the island were four; the admissions for scurvy were 34, and one of them ended fatally. The medical officer who furnished the report for last year writes:—"The men proposed to be sent (to Perim) are previously individually inspected by the medical officer, and not a tainted man allowed to go, yet the detachment which returned early this month had two fatal cases from scurvy, and the majority had either to be admitted into hospital as confirmed cases, or to receive limejuice out of hospital, as tainted." The diet is thought to be faulty, and the medical officer was taking measures to have it improved.

TABLE I.—INCREASE and DECREASE among the BRITISH TROOPS serving in the BOMBAY PRESIDENCY during the Year 1865.

(From the Office of the Adjutant General of the Army.)

	Effective.	Unattached List.	TOTAL.	Effectives.	Unattached List.	TOTAL.
Strength on 1st January 1865				12,529	368	12,897
INCREASE.						
Recruited in India	15	- -	15			
Drafted or transferred from England or Colonies	2,897	- -	2,897			
Transfers received	1,029	- -	*1,029			
Joined from desertion	6	- -	6			
TOTAL Increase				3,947	- -	3,947
* Exclusive of 27 men remanded from Unattached List.				16,476	368	16,844
DECREASE.						
Time-expired	688	2	690			
Discharged by invaliding	362	3	365			
Ditto by purchase	24	6	30			
Ditto by court martial	14	- -	14			
Ditto otherwise	- -	9	9			
Deserted	19	2	21			
Transfers given	1,205	1	†1,206			
Transferred on duty to England or Colonies	1,456	- -	1,456			
Ditto by invaliding to England or Colonies	—	—	—			
Died	403	24	427			
Promoted to honorary commissions	- -	2	2			
TOTAL Decrease				4,171	49	4,220
† Exclusive of 64 men transferred to Unattached List.				12,305	319	12,624
REVERSIONS.						
Remanded from Unattached List to Effectives			27			
Transferred from Effectives to Unattached List			64			
Difference to be deducted from Effectives and added to Unattached List			37	37	37	—
Strength on 1st January 1866				12,268	356	12,624

N.B.—The following information respecting Transfers is explanatory of the items under that head:—

RECEIVED.		
Transfers received from other Presidencies and from St. Helena Regiment	45	
Ditto Locals volunteering for general service	312	
Ditto between corps serving in the Presidency of Bombay		
Received from 44th, 56th, and 72nd Regiments previous to embarkation of these corps for England	672	
		1,029
GIVEN.		
Transfers to other Presidencies	20	
Ditto between corps in the Presidency	311	
Ditto given by 44th, 56th, and 72nd Regiments to corps serving in this Presidency	672	
Ditto - - ditto - - ditto in other Presidencies	202	
Ditto granted commissions from the ranks	1	
		1,206
DECREASE during the Year (Transfers)		177

TABLE II.—NUMBER of MARRIED and UNMARRIED EUROPEAN NON-COMMISSIONED OFFICERS and SOLDIERS Serving in the BOMBAY PRESIDENCY on the 1st day of May 1865.

(From a Return given by the Adjutant General of the Army.)

	Staff Serjeants.			Serjeants.			Rank and File.		
	Establishment in India.	Actual Strength.		Establishment in India.	Actual Strength.		Establishment in India.	Actual Strength.	
		Married.	Unmarried.		Married.	Unmarried.		Married.	Unmarried.
Artillery.									
Royal Horse Artillery, E Brigade. — Head Quarters	5	4	1	–	–	–	–	–	–
A Battery	2	1	1	6	3	3	137	9	115
B Ditto	2	2	–	6	2	4	137	7	125
C Ditto	2	2	–	6	4	2	137	13	112
D Ditto	2	–	2	6	3	3	137	12	117
Royal Artillery, 14th Brigade. — Head Quarters	5	2	3	–	–	–	–	–	–
D Battery	2	1	1	6	2	4	137	8	149
E Ditto	2	1	1	6	2	4	137	12	114
F Ditto	2	2	–	6	1	5	137	8	146
18th Brigade — Head Quarters	5	3	3	–	–	–	–	–	–
A Battery	2	–	2	6	2	4	137	17	119
B Ditto	2	2	–	6	4	2	137	15	126
C Ditto	2	1	1	6	4	2	137	17	120
D Ditto	2	2	–	6	3	3	137	13	128
E Ditto	2	2	–	6	4	2	137	18	125
F Ditto	2	2	–	6	2	4	137	14	122
G Ditto	2	2	–	6	2	4	137	18	128
21st Brigade — Head Quarters	4	5	–	–	–	–	70	–	–
No. 1 Battery	1	1	2	4	2	5	70	13	71
„ 3 Ditto	1	1	–	4	2	2	70	7	59
„ 4 Ditto	1	1	–	4	4	–	70	12	55
„ 5 Ditto	1	1	–	4	–	4	70	4	62
„ 6 Ditto	1	1	–	4	2	2	70	12	58
„ 7 Ditto	1	1	–	4	2	2	70	6	64
TOTAL	53	40	17	108	50	61	2,338	230	2,115
Cavalry.									
Her Majesty's 3rd Dragoon Guards	10	(a) 5	6	28	7	21	477	23	401
Ditto — 6th Inniskilling Dragoons	10	(b) 4	5	28	7	21	477	19	446
	20	9	11	56	14	42	954	42	847
Infantry.									
Her Majesty's 4th Regt. of Foot, 1st Battalion	8	(c) 4	2	40	17	16	871	38	692
Ditto — 33rd „ — ditto	8	(d) 8	1	40	18	18	871	45	752
Ditto — 44th „ — ditto	8	(e) 7	2	40	17	18	871	66	664
Ditto — 45th „ — ditto	8	4	(f) 5	40	21	19	871	82	765
Ditto — 56th „ — ditto	8	(g) 6	(g) 2	40	11	26	871	29	758
Ditto — 72nd „ — Highlanders	8	(h) 4	2	40	6	27	877	38	697
Ditto — 95th „ — Ditto	8	(i) 6	3	40	9	27	(h) 871	55	760
Ditto — 103rd „ — Ditto	8	4	(j) 3	40	21	8	871	84	819
Ditto — 106th „ — Light Infantry	8	(k) 4	5	40	10	21	871	60	577
Ditto — 109th „ — Ditto	8	(l) 4	4	40	13	26	871	48	761
	80	51	29	400	143	206	8,716	545	7,245
Her Majesty's Bombay Sappers and Miners	2	1	1	4	8	6	8	5	7
TOTAL	155	101	58	568	215	315	12,016	822	10,214

(a) Includes schoolmaster.
(b) Includes schoolmaster.
(c) Includes schoolmaster and armourer.
(d) Includes schoolmaster.
(e) Includes schoolmaster and armourer.
(f) Includes schoolmaster.
(g) Includes schoolmaster and armourer.
(h) Includes schoolmaster and six pipers.
(i) Includes schoolmaster.
(j) Includes schoolmaster.
(k) Includes schoolmaster.
(l) Includes schoolmaster.

III.—Sickness and Mortality among European Troops.

YEARS.	Mean Strength from Weekly Returns.	Admissions into Hospital.	Daily Sick, from Hospital Diets.	Deaths in India.			Invalided to be Discharged.	Ratio to Strength per Mille.				
				In Hospital.	Out of Hospital.	Total.		Admissions.	Daily Sick.	Deaths.		Invalided.
										In Hospital.	All Deaths.	
1864 - - -	12,412	18,745	736	179	18	197	169	1,514	59·3	14·4	15·9	13·6
1865 - - -	11,898	18,089	671	402	16	418	176	1,520	56·4	33·8	35·1	14·8

IV.—Sickness and Mortality from Classes of Disease.

	Zymotic.	Cachectic.	Local.	Developmental.	Violence.
Admissions - - - - - - - -	12,340	354	4,035	116	1,244
Deaths - - - - - - - -	270	31	78	4	35
Per mille of Strength.					
1865 - Admissions - - - - -	1,037·1	29·8	339·1	9·7	104·6
1865 - Deaths - - - - -	22·7	2·6	6·6	0·3	2·9
1864 - Admissions - - - - -	1,021·0	24·3	345·1	4·0	115·6
1864 - Deaths - - - - -	6·4	1·5	6·0	0·0	1·9

V.—Sickness and Mortality from Orders of Disease.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of Each to All, per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Miasmatic disease - - - - -	9,547	261	802·4	21·9	52·8	62·4
Enthetic disease - - - - -	2,401	2	201·8	0·2	13·3	0·5
Dietic disease - - - - - -	270	7	22·7	0·6	1·5	1·7
Parasitic disease - - - - -	122	- -	10·3	- -	0·7	—
Diathetic disease - - - - -	141	4	11·9	0·3	0·8	0·9
Phthisic disease - - - - -	213	27	17·9	2·3	1·2	6·5
Disease of nervous system - - -	417	17	35·0	1·4	2·3	4·1
„ circulatory system - - -	155	9	13·0	0·7	0·9	2·2
„ respiratory system - - -	442	13	37·1	1·1	2·4	3·1
„ digestive system - - -	1,553	36	130·5	3·0	8·6	8·6
„ urinary system - - - -	26	1	2·2	0·1	0·1	0·2
„ reproductive system - - -	102	- -	13·6	- -	1·0	—
„ locomotive system - - -	62	- -	5·2	- -	0·3	—
„ tegumentary system - - -	1,218	2	102·4	0·2	6·7	0·5
Atrophic - - - - - - -	116	4	9·7	0·3	0·6	0·9
Violence, accidental - - - - -	1,201	28	100·9	2·3	6·6	6·7
Battle - - - - - - - -	1	- -	0·1	—	—	—
Homicide - - - - - - -	2	2	0·2	0·2	- -	0·5
Suicide - - - - - - -	2	5	0·2	0·4	- -	1·2
Punishment - - - - - - -	35	- -	2·9	- -	0·2	—
Unspecified - - - - - - -	3	- -	0·3	—	—	—

VI.—Sickness and Mortality from Various Diseases.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of Each to All, per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Cholera - - - - - - - -	333	191	28·0	16·0	1·8	45·7
Small-pox - - - - - - - -	12	2	1·0	0·2	0·1	0·5
Measles - - - - - - - -	—	—	—	—	—	—
Dysentery - - - - - - - -	504	19	42·4	1·6	2·7	4·6
Diarrhœa - - - - - - - -	1,428	9	120·0	0·8	7·8	2·2
Fever, remittent and intermittent - - -	4,525	31	380·3	2·6	24·9	7·4
Fever of other type - - - - -	868	6	73·0	0·5	4·8	1·4
Scorbutus and purpura - - - - -	30	1	2·5	0·1	0·2	0·2
Delirium tremens - - - - - -	49	6	4·1	0·5	0·2	1·4
Ebriositas - - - - - - - -	191	- -	16·0	- -	1·5	—
Hydatid - - - - - - - -	—	—	—	—	—	—
Vermes - - - - - - - -	1	- -	0·1	—	—	—
Phthisis pulmonalis - - - - -	133	18	11·2	1·5	1·7	4·3
Hepatitis - - - - - - - -	578	26	48·6	2·2	3·2	6·2
Icterus - - - - - - - -	69	- -	5·8	- -	0·4	—
Spleen disease - - - - - - -	58	3	4·9	0·3	0·3	0·7
All other causes - - - - - - -	9,310	106	782·6	8·9	51·4	25·4

VII.—Poonah Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Mean strength, 3,563. Daily sick, 189·8.)	Admissions	4,968	77	1,010	147	414	3	27	243	21	783
	Deaths	71	35	7	5	1	–	–	7	–	–
	Ratio per mille.										
	Admissions	1,394·3	21·6	283·5	41·3	116·5	0·3	7·6	68·2	5·9	219·8
	Deaths	19·9	9·8	2·0	1·4	0·3	–	–	2·0	–	–
KIRKEE (Mean strength, 568. Daily sick, 37·0.)	Admissions	925	8	122	23	99	–	3	56	9	117
	Deaths	6	5	–	–	–	–	–	1	–	–
	Ratio per mille.										
	Admissions	1,628·0	14·0	214·8	40·5	173·3	1·8	5·3	98·6	15·8	206·0
	Deaths	10·6	8·8	–	–	–	–	–	1·8	–	–
POONA (Mean strength, 197·5. Daily sick, 93·3.)	Admissions	2,532	27	592	104	205	1	24	126	9	354
	Deaths	37	14	4	5	1	–	–	4	–	–
	Ratio per mille.										
	Admissions	1,282·8	13·7	299·7	52·7	103·8	0·5	12·2	63·8	4·6	179·2
	Deaths	18·7	7·1	2·0	2·5	0·5	–	–	2·0	–	–
SATARA (Mean strength, 220. Daily sick, 7·0.)	Admissions	209	1	44	1	9	–	–	5	–	73
	Deaths	3	–	1	–	–	–	–	1	–	–
	Ratio per mille.										
	Admissions	950·0	4·5	200·0	4·5	40·9	–	–	22·7	–	331·8
	Deaths	13·6	–	4·5	–	–	–	–	4·5	–	–
SHOLAPOOR (Mean strength, 108. Daily sick, 6·5.)	Admissions	181	1	58	4	4	–	–	13	–	29
	Deaths	3	–	2	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,675·9	9·3	537·0	37·0	37·0	–	–	120·4	–	268·5
	Deaths	27·8	–	19·0	–	–	–	–	–	–	–
AHMEDNUGUR (Mean strength, 570. Daily sick, 41·0.)	Admissions	976	39	155	15	90	1	–	40	3	193
	Deaths	19	15	–	–	–	–	–	1	–	–
	Ratio per mille.										
	Admissions	1,712·3	68·4	271·9	26·3	157·9	1·7	–	70·2	5·3	338·6
	Deaths	33·3	26·3	–	–	–	–	–	1·7	–	–
ASEERGHUR (Mean strength, 122. Daily sick, 5·0.)	Admissions	145	1	39	–	7	–	–	3	–	17
	Deaths	3	1	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,188·5	8·2	319·7	–	57·4	–	–	24·6	–	139·3
	Deaths	24·6	8·2	–	–	–	–	–	–	–	–

VIII.—Mhow Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Mean strength, 2,832. Daily sick, 173·8.)	Admissions	5,097	100	2,189	144	274	5	16	106	11	549
	Deaths	126	72	14	5	–	–	2	5	–	–
	Ratio per mille.										
	Admissions	1,799·8	35·3	773·0	50·8	96·8	1·8	5·6	307·4	3·9	193·9
	Deaths	44·5	25·4	4·9	1·8	–	–	0·7	1·8	–	–
MHOW (Mean strength, 1,495. Daily sick, 107·3.)	Admissions	2,811	16	1,406	37	144	3	11	55	6	293
	Deaths	27	9	4	4	–	–	1	1	–	–
	Ratio per mille.										
	Admissions	1,879·6	10·7	940·5	24·7	96·3	2·0	7·4	36·8	4·0	196·0
	Deaths	18·1	6·0	2·3	2·3	–	–	0·7	0·7	–	–
INDORE (Mean strength, 113. Daily sick, 3·2.)	Admissions	170	1	85	1	10	–	–	2	2	20
	Deaths	1	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,504·4	8·8	752·2	8·8	88·5	–	–	17·7	17·7	177·0
	Deaths	8·8	–	–	–	–	–	–	–	–	–
NEEMUCH (Mean strength, 465. Daily sick, 32·1.)	Admissions	1,095	65	391	55	37	1	1	12	2	75
	Deaths	74	49	7	–	–	–	1	3	–	–
	Ratio per mille.										
	Admissions	2,354·8	139·8	840·9	118·3	79·6	2·2	2·2	25·8	4·3	161·3
	Deaths	159·1	105·3	15·0	–	–	–	2·2	6·5	–	–
NUSERABAD (Mean strength, 693. Daily sick, 29·2.)	Admissions	895	17	256	39	64	1	4	34	1	141
	Deaths	21	13	3	1	–	–	–	1	–	–
	Ratio per mille.										
	Admissions	1,291·5	24·5	369·4	56·3	92·3	1·4	5·8	49·0	1·4	203·5
	Deaths	30·3	18·8	4·3	1·4	–	–	–	1·4	–	–
AJMEER (Mean strength, 61. Daily sick, 2·0.)	Admissions	120	1	48	10	19	–	–	3	–	20
	Deaths	3	1	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,967·2	16·4	786·9	163·9	311·5	–	–	49·2	–	327·9
	Deaths	49·2	16·4	–	–	–	–	–	–	–	–
OODEPOOR (Mean strength, 5. Daily sick, 0.)	Admissions	6	–	3	2	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,200·0	–	600·0	400·0	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–

IX.—Northern Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Mean Strength, 1,139. Daily sick, 56·7.)	Admissions	188·3	37	809	17	174	–	4	40	9	203
	Deaths	43	19	5	–	1	–	–	2	–	–
	Ratio per mille.										
	Admissions	1,653·2	32·5	710·3	14·9	152·8	–	3·5	35·1	7·9	178·2
	Deaths	37·8	16·7	4·4	–	0·8	–	–	1·8	–	–
MOUNT ABOO (Mean strength, 64. Daily sick, 2·0.)	Admissions	92	–	58	–	6	–	–	2	–	–
	Deaths	2	–	–	–	1	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,437·5	–	906·2	–	93·7	–	–	31·2	–	–
	Deaths	31·2	–	–	–	15·6	–	–	–	–	–
DEESA (Mean strength, 837. Daily sick, 38·0.)	Admissions	1,272	3	604	9	127	–	4	30	9	170
	Deaths	16	2	5	–	–	–	–	2	–	–
	Ratio per mille.										
	Admissions	1,519·7	3·6	721·6	10·8	163·7	–	4·8	35·8	10·8	203·1
	Deaths	19·1	2·2	6·0	–	–	–	–	2·2	–	–
AHMEDABAD (Mean strength, 143. Daily sick, 11·5.)	Admissions	325	4	80	5	23	–	–	5	–	23
	Deaths	5	3	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	2,272·7	28·0	559·4	35·0	160·8	–	–	35·0	–	160·8
	Deaths	35·0	21·0	–	–	–	–	–	–	–	–
BARODA (Mean strength, 95. Daily sick, 5·2.)	Admissions	194	30	67	3	18	–	–	3	–	10
	Deaths	20	14	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	2,042·1	315·8	705·3	31·6	189·5	–	–	31·6	–	105·3
	Deaths	210·5	147·4	–	–	–	–	–	–	–	–

X.—Sind Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Mean strength, 1,398. Daily sick, 58·5.)	Admissions	1,376	16	292	42	69	2	9	47	3	241
	Deaths	29	11	2	2	2	–	1	–	–	–
	Ratio per mille.										
	Admissions	984·3	11·4	208·9	30·0	49·4	1·4	6·4	33·6	2·1	172·2
	Deaths	20·7	7·9	1·4	1·4	1·4	–	0·7	–	–	–
KURACHEE (Mean strength, 1,022. Daily sick, 45·5.)	Admissions	1,032	15	215	37	59	–	6	35	3	187
	Deaths	26	10	10	2	2	–	1	–	–	–
	Ratio per mille.										
	Admissions	1,009·8	14·7	210·4	36·2	57·7	–	5·9	34·2	2·9	183·0
	Deaths	25·4	9·8	9·8	2·0	2·0	–	1·0	–	–	–
HYDERABAD (Mean strength, 376. Daily sick, 13·0.)	Admissions	344	1	77	5	10	2	3	12	–	54
	Deaths	3	1	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	914·9	2·7	204·8	13·3	26·6	5·3	8·0	31·9	–	143·6
	Deaths	8·0	2·7	–	–	–	–	–	–	–	–

XI.—Bombay Brigade.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
BRIGADE (Mean strength, 541. Daily sick, 39·0.)	Admissions	1,204	26	385	16	191	3	18	34	–	53
	Deaths	21	12	5	–	–	–	–	2	–	–
	Ratio per mille.										
	Admissions	2,225·5	48·1	711·6	29·6	353·0	5·5	33·3	62·8	–	98·0
	Deaths	38·8	22·2	9·2	–	–	–	–	3·7	–	–
BOMBAY (Mean strength, 467. Daily sick, 36·5.)	Admissions	1,113	25	355	15	182	3	17	30	–	39
	Deaths	20	11	5	–	–	–	–	2	–	–
	Ratio per mille.										
	Admissions	2,383·3	53·5	760·2	32·1	389·7	6·4	36·4	64·2	–	83·5
	Deaths	42·8	23·6	10·7	–	–	–	–	4·3	–	–
KHANDALA (Mean strength, 74. Daily sick, 2·5.)	Admissions	91	1	30		9	–	1	4	–	14
	Deaths	1	1	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,229·7	13·5	405·4	13·5	121·6	–	13·5	54·1	–	189·2
	Deaths	13·5	13·5	–	–	–	–	–	–	–	–

XII.—Belgaum Brigade.

BELGAUM (Mean strength, 932. Daily sick, 54·0.)	Admissions	1,089	2	193	27	73	–	7	46	4	270
	Deaths	12	–	1	2	–	–	1	2	–	1
	Ratio per mille.										
	Admissions	1,168·5	2·1	207·1	29·0	78·3	–	7·5	49·3	4·3	289·7
	Deaths	12·	–	1·1	2·1	–	–	1·1	2·1	–	1·1

XIII.—Aden Brigade.

BRIGADE (Mean strength, 721. Daily sick, 34·1.)	Admissions	1,071	23	198	34	135	14	9	40	1	158
	Deaths	42	11	–	1	3	1	2	5	–	1
	Ratio per mille.										
	Admissions	1,485·4	31·9	274·6	47·2	187·2	19·4	12·5	55·5	1·4	219·1
	Deaths	58·3	15·3	–	1·4	4·2	1·4	2·8	6·9	–	1·4
ADEN (Mean strength, 712. Daily sick, 34·1.)	Admissions	1,062	23	197	34	133	14	9	40	1	156
	Deaths	42	11	–	1	3	1	2	5	–	1
	Ratio per mille.										
	Admissions	1,491·6	32·3	278·1	47·8	186·8	19·7	12·7	56·2	1·4	218·0
	Deaths	59·0	15·4	–	1·4	4·2	1·4	2·8	7·0	–	1·4
ARABIA FIELD FORCE. (For 13 weeks) (Mean weekly strength, 9. Daily sick, 0.)	Admissions	9	–	1	–	2	–	–	–	–	2
	Deaths		–	–	–	–	–	–	–	–	–
	Ratio per mille (yearly).										
	Admissions	1,000·0	–	111·1	–	222·2	–	–	–	–	222·2
	Deaths	–	–	–	–	–	–	–	–	–	–

XIV.—Invalids and Convalescents at Sanitaria and Depôts.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
TOTAL INVALIDS AND CONVALESCENTS (Mean strength, 291. Daily sick, 45·4.)	Admissions	817	16	142	34	65	3	37	71	7	69
	Deaths	43	10	2	2	2	–	10	2	2	–
	Ratio per mille.										
	Admissions	2,786·9	55·0	488·0	116·8	223·4	10·3	127·1	244·0	24·0	237·1
	Deaths	147·8	34·4	6·9	6·9	6·9	–	34·4	6·9	6·9	–
COLABA (Mean strength, 34. Daily sick, 18·0.)	Admissions	157	–	12	10	17	1	15	19	–	16
	Deaths	9	–	–	1	2	–	4	1	1	–
	Ratio per mille.										
	Admissions	4,617·6	–	352·9	294·1	500·0	29·4	441·2	558·8	–	482·3
	Deaths	264·7	–	–	29·4	58·8	–	117·6	29·4	29·4	–
POONA (Mean strength, 48. Daily sick, 6·5.)	Admissions	142	–	21	15	8	–	12	9	–	17
	Deaths	10	–	–	1	–	–	4	1	–	–
	Ratio per mille.										
	Admissions	2,958·3	–	437·5	312·5	166·7	–	250·0	187·5	–	354·2
	Deaths	208·3	–	–	20·8	–	–	83·3	20·8	–	–
POORUNDHUR (Mean strength, 67. Daily sick, 7·0.)	Admissions	240	7	54	4	26	–	–	7	–	18
	Deaths	6	3	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	3,582·1	104·5	806·0	59·7	388·0	–	–	104·5	–	268·7
	Deaths	89·5	44·8	–	–	–	–	–	–	–	–
SULABUT KHAN'S TOMB. (Hot season only) (Mean yearly strength, 2. Daily sick, 0.)	Admissions	–	–	–	–	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	–	–	–	–	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
MOUNT ABOO (Mean strength, 19. Daily sick, 1·5.)	Admissions	43	–	17	–	1	–	1	6	4	2
	Deaths	1	–	–	–	–	–	–	–	1	–
	Ratio per mille.										
	Admissions	2,263·2	–	894·7	–	52·6	–	52·6	315·8	210·5	105·3
	Deaths	52·6	–	–	–	–	–	–	–	–	–
DHOLIAKOTE. (For 13 weeks) (Mean weekly strength, 3. Daily sick, 0·2.) (Yearly.)	Admissions	11	6	1	–	–	–	–	–	–	–
	Deaths	4	4	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	11,000·0	6,000·0	1,000·0	–	–	–	–	–	–	–
	Deaths	4,000·0	4,000·0	–	–	–	–	–	–	–	–

XIV.—Invalids and Convalescents at Sanitaria and Depôts—*continued.*

		All Causes.	Cholera	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
BULSAR	Admissions	57	–	13	–	4	–	–	5	2	2
(Mean strength, 35 during 22 weeks. Daily sick, 2·5.)	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	3,166·7	–	722·2	–	222·2	–	–	277·8	111·1	111·1
	Deaths	–	–	–	–	–	–	–	–	–	–
KURACHEE	Admissions	94	–	12	1	3	–	7	12	1	7
(Mean strength, 51. Daily sick, 4·5.)	Deaths	9	–	2	–	–	–	2	–	–	–
	Ratio per mille.										
	Admissions	1,843·1	–	235·3	19·6	58·8	–	137·2	235·3	19·6	137·2
	Deaths	176·5	–	39·2	–	–	–	39·2	–	–	–
GHIZREE	Admissions	73	3	12	4	6	2	2	13	–	7
(Mean strength, 51. Daily sick, 5·2.)	Deaths	4	3	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,431·4	58·8	235·3	78·4	117·6	39·2	39·2	254·9	–	137·2
	Deaths	78·4	58·8	–	–	–	–	–	–	–	–

XV.—Effectives Marching.

	Admissions	537	34	170	40	32	–	–	14	2	69
	Deaths	28	21	1	1	–	–	–	1	1	–
(Mean strength, 453. Daily sick, 16·2.)	*Ratio per mille.*										
	Admissions	1,185·4	75·1	375·3	88·3	70·6	–	–	30·9	4·4	152·3
	Deaths	61·8	46·3	2·2	2·2	–	–	–	2·2	2·2	–

XVI.—Invalids and Convalescents Marching.

	Admissions	47	2	5	3	1	–	6	6	–	6
	Deaths	3	–	–	1	–	–	2	–	–	–
(Mean strength, 28. Daily sick, 3·5.)	*Ratio per mille.*										
	Admissions	1,678·6	71·4	178·6	107·1	35·7	–	214·3	214·3	–	214·3
	Deaths	107·1	–	–	35·7	–	–	71·4	–	–	–

XVII.—Sickness and Mortality among Native Troops.

Year.	Mean Strength from Monthly Returns.	Admissions into Hospital.	Daily Sick.	Deaths in Hospital.	Invalided to be Discharged.	Ratio to Strength per Mille.			
						Admissions.	Daily Sick.	Deaths in Hospital	Invalided.
1865 - -	24,737	26,443	1,001	365	1,015	1,068·7	40·5	14·8	41·0

XVIII.—Sickness and Mortality from Classes of Disease.

	Zymotic.	Cachetic.	Local.	Developmental.	Violence.
Admissions - - - - - - - -	19,028	138	4,465	114	2,698
Deaths - - - - - - - -	270	12	61	12	10
Ratio per mille.					
Admissions - - - - - - - -	769·2	5·5	180·5	4·6	109·0
Deaths - - - - - - - -	10·9	0·5	2·5	0·5	0·4

XIX.—Sickness and Mortality from Orders of Disease.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of each to all per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Miasmatic Disease - - - - -	17,214	226	695·8	9·1	65·0	61·9
Enthetic ,, - - - - -	597	7	24·1	0·3	2·2	1·9
Dietic ,, - - - - - -	464	33	18·8	1·3	1·7	9·0
Parasitic ,, - - - - - -	753	4	30·4	0·2	2·8	1·1
Diathetic ,, - - - - - -	90	5	3·6	0·2	0·3	1·4
Phthisic ,, - - - - - -	48	7	1·9	0·3	0·1	1·9
Disease of Nervous System - - - -	400	12	16·2	0·5	1·5	3·3
,, Circulatory ,, - - - -	23	4	0·9	0·2	0·0	1·1
,, Respiratory ,, - - - -	409	27	16·5	1·1	1·5	7·4
,, Digestive ,, - - - -	1,153	15	46·6	0·6	4·3	4·1
,, Urinary ,, - - - -	24	1	1·0	-	0·0	0·3
,, Reproductive ,, - - - -	107	-	4·3	-	0·4	-
,, Locomotive ,, - - - -	31	1	1·3	-	1·1	0·3
,, Tegumentary ,, - - - -	2,318	1	93·7	-	8·7	0·3
Atrophic - - - - - - -	114	12	4·6	0·5	0·4	3·3
Violence Accidental - - - - -	2,690	7	108·7	0·3	10·0	1·9
Battle - - - - - - -	3	3	0·1	0·1	-	0·8
Homicide - - - - - - -	-	-	-	-	-	-
Suicide - - - - - - -	-	-	-	-	-	-
Punishment - - - - - -	5	-	0·2	-	-	-

XX.—Sickness and Mortality from various Diseases.

	Admissions.	Deaths,	Per Mille of Strength.		Ration of each to all per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Cholera - - - - - - -	264	128	10·7	5·2	1·0	35·1
Small-pox - - - - - - -	5	-	0·2	-	-	-
Measles - - - - - - -	-	-	-	-	-	-
Dysentery - - - - - - -	568	11	23·0	0·4	2·2	3·0
Diarrhœa - - - - - - -	1,095	16	44·3	0·6	4·1	4·4
Fever, remittent and intermittent - - -	10,911	49	444·1	2·0	41·3	13·4
Fever of other type - - - -	910	8	36·8	0·3	3·4	2·2
Scorbutus and Purpura - - - -	462	33	18·7	1·3	1·7	9·1
Delirium Tremens - - - - -	1	-	-	-	-	-
Ebriositas - - - - - - -	1	-	-	-	-	-
Hydatid - - - - - - -	-	-	-	-	-	-
Vermes - - - - - - -	-	-	-	-	-	-
Phthisis Pulmonalis - - - - -	18	6	0·7	0·2	0·1	1·6
Hepatitis - - - - - - -	54	7	2·2	0·3	0·2	1·9
Icterus - - - - - - -	21	1	0·8	-	0·1	0·3
Spleen - - - - - - -	61	-	2·5	-	0·2	-
All other causes - - - - - -	12,072	106	488·0	4·3	45·7	29·0

XXI.—Poona Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Average strength, 5,471. Daily sick, 224)	Admissions	6,131	69	2,595	256	298	64	8	16	2	116
	Deaths	66	31	7	4	1	5	1	1	–	–
	Ratio per mille.										
	Admissions	1,120·6	12·6	474·3	46·8	54·5	11·7	1·5	2·9	0·4	21·2
	Deaths	12·1	5·7	1·3	0·7	0·2	0·9	0·2	0·2	–	–
KIRKEE (Average strength, 167. Daily sick, 6·0.)	Admissions	238	12	109	9	17	4	–	1	–	4
	Deaths	5	4	–	1	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,425·1	71·9	652·7	53·9	101·8	24·0	–	6·0	–	24·0
	Deaths	29·9	24·0	–	6·0	–	–	–	–	–	–
POONA (Average strength, 2,273. Daily sick, 140·0.)	Admissions	3,305	14	1,368	109	195	18	5	10	–	53
	Deaths	20	7	2	–	–	1	1	–	–	–
	Ratio per mille.										
	Admissions	1,454·0	6·2	601·8	48·0	85·8	7·9	2·2	4·4	–	23·3
	Deaths	8·8	3·1	0·9	–	–	0·4	0·4	–	–	–
SHOLAPOOR (Average strength, 693. Daily sick, 13·0.)	Admissions	226	–	86	16	13	–	–	–	–	3
	Deaths	6	–	–	1	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	326·1	–	23·7	23·1	18·8	–	–	–	–	4·3
	Deaths	8·7	–	–	1·4	–	–	–	–	–	–
SEROOR (Average strength, 252. Daily sick, 7·0.)	Admissions	154	4	43	7	2	–	–	1	–	6
	Deaths	3	–	1	1	1	–	–	–	–	–
	Ratio per mille.										
	Admissions	611·1	15·9	170·6	27·8	7·9	–	–	4·0	–	23·8
	Deaths	11·9	–	4·0	4·0	4·0	–	–	–	–	–
AHMEDNUGGUR (Average strength, 662. Daily sick, 22·0.)	Admissions	567	9	238	34	17	–	2	–	1	16
	Deaths	8	7	1	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	856·5	13·6	359·5	51·4	25·8	–	3·0	–	1·5	24·2
	Deaths	12·1	10·6	1·5	–	–	–	–	–	–	–
MALIGAUM (Average strength, 630. Daily sick, 13·0.)	Admissions	680	17	312	34	24	4	–	4	–	8
	Deaths	12	8	2	–	–	–	–	1	–	–
	Ratio per mille.										
	Admissions	1,079·4	27·0	495·2	53·9	38·1	6·3	–	6·3	–	12·7
	Deaths	19·0	12·7	3·2	–	–	–	–	1·6	–	–
ASEERGHUR (Average strength, 178. Daily sick, 4·0.)	Admissions	156	4	90	8	6	–	–	–	–	1
	Deaths	2	2	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	876·4	22·5	505·6	44·9	33·7	–	–	–	–	5·6
	Deaths	11·2	11·2	–	–	–	–	–	–	–	–
DHOOLIA (Average strength, 616. Daily sick, 19·0.)	Admissions	805	9	349	39	24	38	1	–	1	25
	Deaths	10	3	1	1	–	4	–	–	–	–
	Ratio per mille.										
	Admissions	1,306·8	14·6	566·6	63·3	39·0	61·7	1·6	–	1·6	40·6
	Deaths	16·2	4·9	1·6	1·6	1·6	6·5	–	–	–	–

XXII.—Mhow Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION	Admissions	3,817	17	1,827	74	111	19	1	11	20	85
(Average strength, 3,839. Daily sick, 189.)	Deaths	32	8	8	–	2	4	1	–	–	1
	Ratio per mille.										
	Admissions	994·3	4·4	475·9	19·3	28·9	4·9	0·3	2·9	5·2	22·1
	Deaths	8·3	2·1	2·1	–	0·5	1·0	0·3	–	–	0·3
MHOW	Admissions	1,388	6	551	25	33	11	1	5	11	8
(Average strength, 1,141. Daily sick, 68·0.)	Deaths	14	2	7	–	–	1	1	–	–	–
	Ratio per mille.										
	Admissions	1,216·5	5·3	482·9	21·9	28·9	9·6	0·8	4·4	9·6	7·0
	Deaths	12·3	1·7	6·1	–	–	0·8	0·8	–	–	–
INDORE	Admissions	114	1	51	2	9	1	–	2	–	–
(Average strength, 206. Daily sick, 4·0.)	Deaths	1	1	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	553·4	4·9	247·6	9·7	43·7	4·9	–	9·7	29·4	–
	Deaths	4·9	4·9	–	–	–	–	–	–	–	–
SIMROLE. (For 10 months)	Admissions	114	–	69	4	1	–	–	–	–	5
(Average monthly strength, 94. Daily sick, 3·0 (annual).	Deaths	1	–	–	–	1	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,461·5	–	884·6	51·3	12·8	–	–	–	–	64·1
	Deaths	12·8	–	–	–	12·8	–	–	–	–	–
AUGUR	Admissions	237	6	73	5	9	–	–	1	2	14
(Average strength, 291. Daily sick, 10·0.)	Deaths	3	3	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	814·4	20·6	250·9	17·2	30·9	–	–	3·4	6·9	48·1
	Deaths	10·3	10·3	–	–	–	–	–	–	–	–
MEHIDPOOR	Admissions	286	2	173	2	5	1	–	–	–	1
(Average strength, 334. Daily sick, 5·0.)	Deaths	1	1	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	856·3	6·0	518·0	6·0	15·0	3·0	–	–	–	3·0
	Deaths	3·0	3·0	–	–	–	–	–	–	–	–
NEEMUCH	Admissions	907	2	565	20	15	–	–	2	1	32
(Average strength, 897. Daily sick, 26·0.)	Deaths	4	1	1	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,011·1	2·2	629·9	22·3	16·7	–	–	2·2	1·1	35·7
	Deaths	4·5	1·1	1·1	–	–	–	–	–	–	–
NUSERABAD	Admissions	735	–	317	15	39	6	–	1	–	25
(Average strength, 864. Daily sick, 73·0.)	Deaths	8	–	–	–	1	3	–	–	–	1
	Ratio per mille.										
	Admissions	850·7	–	366·9	17·4	45·1	6·9	–	1·1	–	28·9
	Deaths	9·3	–	–	–	1·1	3·5	–	–	–	1·1
OODEPOOR. (For 2 months)	Admissions	36	–	28	1	–	–	–	–	–	–
(Average monthly strength, 165. Daily sick, 1·2 (annual).	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,285·7	–	1,000·0	35·7	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–

XXIII.—Northern Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Average strength, 5,077. Daily sick, 150.)	Admissions	5,627	91	2,561	134	222	63	4	15	9	75
	Deaths	97	52	5	3	4	7	2	1	–	–
	Ratio per mille.										
	Admissions	1,108·3	17·9	504·4	26·4	43·7	12·4	0·8	3·0	1·8	14·8
	Deaths	19·1	10·2	1·0	0·6	0·8	1·4	0·4	0·2	–	–
SURAT (Average strength, 607. Daily sick, 16.0.)	Admissions	648	15	298	16	28	3	–	3	–	10
	Deaths	11	9	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,067·5	24·7	490·9	26·4	46·1	4·9	–	4·9	–	16·5
	Deaths	18·1	14·8	–	–	–	–	–	–	–	–
BROACH (Average strength, 63. Daily sick, 2·0.)	Admissions	91	–	49	14	7	–	–	–	–	2
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,444·4	–	777·8	222·2	111·1	–	–	–	–	31
	Deaths	–	–	–	–	–	–	–	–	–	–
BARODA (Average strength, 654. Daily sick, 20·0.)	Admissions	656	8	262	22	23	2	–	–	3	11
	Deaths	12	5	2	–	1	2	1	–	–	–
	Ratio per mille.										
	Admissions	1,003·1	12·2	400·6	33·6	35·2	3·1	–	–	4·6	16·8
	Deaths	18·3	7·6	3·1	–	1·5	3·1	1·5	–	–	–
AHMEDABAD (Average strength, 1,223. Daily sick, 23·0.)	Admissions	871	62	364	20	40	7	–	1	3	13
	Deaths	45	35	–	2	1	2	–	–	–	–
	Ratio per mille.										
	Admissions	712·2	50·7	297·6	16·3	32·7	5·7	–	0·8	2·5	10·6
	Deaths	36·8	28·6	–	1·6	0·8	1·6	–	–	–	–
DEESA (Average strength, 868. Daily sick, 24·0.)	Admissions	1,039	–	369	10	44	5	1	2	1	9
	Deaths	4	–	1	–	–	–	1	–	–	–
	Ratio per mille.										
	Admissions	1,196·9	–	425·1	11·5	50·7	5·8	1·2	2·3	1·2	10·4
	Deaths	4·6	–	1·2	–	–	–	1·2	–	–	–
SADRA (Outpost) (Average strength, 62. Daily sick, 1.)	Admissions	66	3	23	4	6	–	–	1	–	1
	Deaths	3	3	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,064·5	48·5	370·9	64·5	96·8	–	–	16·1	–	16·1
	Deaths	48·5	48·5	–	–	–	–	–	–	–	–

NORTHERN DIVISION—*continued.*

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis & Icterus.	Spleen Disease.	Enthetic Disease.
RAJKOTE (Average strength, 728. Daily sick, 26.0.)	Admissions	907	2	420	23	28	31	–	–	–	–
	Deaths	8	–	1	1	1	1	–	–	–	–
	Ratio per mille.										
	Admissions	1,245·9	2·7	576·9	31·6	38·5	42·6	–	–	–	1·4
	Deaths	11·0	–	1·4	1·4	1·4	1·4	–	–	–	–
POORBUNDUR. (Field Force for 7 months.) (Average monthly strength, 139. Daily sick, 4 (annual).	Admissions	123	1	47	7	8	–	–	1	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,518·5	12·3	580·2	86·4	98·8	–	–	12·3	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
DWARKA (Outpost) (Average strength, 340. Daily sick, 13·0.)	Admissions	542	–	323	9	25	3	1	1	–	7
	Deaths	7	–	1	–	1	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,594·1	–	950·0	26·5	73·5	8·8	2·9	2·9	–	20·6
	Deaths	20·6	–	2·9	–	2·9	–	–	–	–	–
BHOOJ (Average strength, 396. Daily sick, 18.)	Admissions	565	–	317	8	9	12	1	5	2	10
	Deaths	6	–	–	–	–	2	–	1	–	–
	Ratio per mille.										
	Admissions	1,426·8	–	800·5	20·2	22·7	30·3	2·5	12·6	5·0	25·3
	Deaths	15·2	–	–	–	–	5·0	–	2·5	–	–
GOVINDPOORA (Field Force for 1 month) (Average monthly strength, 156. Daily sick, 0.)	Admissions	5	–	2	–	1	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	384·6	–	153·8	–	76·9	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
MANIKWARA (Field Force for 3 months) Average monthly strength, 168. Daily sick, 3 (annual).	Admissions	114	–	87	1	3	–	1	1	–	1
	Deaths	1	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	2,714·3	–	2,071·4	23·8	71·4	–	23·8	23·8	–	23·8
	Deaths	23·8	–	–	–	–	–	–	–	–	

XXIV.—Sind Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION	Admissions	3,570	33	1,718	48	79	22	3	19	25	96
(Average strength, 3,442. Daily sick, 116.)	Deaths	37	14	5	–	1	1	1	1	–	–
	Ratio per mille.										
	Admissions	1,037·2	9·6	499·1	13·9	23·0	6·4	0·9	5·5	7·3	27·9
	Deaths	10·7	4·1	1·5	–	0·3	0·3	0·3	0·3	–	–
KURACHEE	Admissions	331	23	110	13	14	1	1	–	2	7
(Average strength, 462. Daily sick, 10.)	Deaths	16	13	1	–	–	–	1	–	–	–
	Ratio per mille.										
	Admissions	716·4	49·8	238·1	28·1	30·3	2·2	2·2	–	4·3	15·2
	Deaths	34·6	28·1	2·2	–	–	–	2·2	–	–	–
HYDERABAD	Admissions	420	9	170	8	5	4	2	1	–	44
(Average strength, 743. Daily sick, 17.)	Deaths	3	1	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	565·3	12·1	228·8	10·8	6·7	5·4	2·7	1·3	–	59·2
	Deaths	4·0	1·3	–	–	–	–	–	–	–	–
JACOBABAD	Admissions	2,819	1	1,438	27	60	17	–	18	23	45
(Average strength, 2,237. Daily sick, 89.)	Deaths	18	–	4	–	1	1	–	1	–	–
	Ratio per mille.										
	Admissions	1,260·2	0·4	642·8	12·1	26·8	7·6	–	8·0	10·3	20·1
	Deaths	8·0	–	1·8	–	0·4	0·4	–	0·4	–	–

XXV.—Bombay Brigade.

BRIGADE	Admissions	2,557	39	1,277	56	194	101	1	3	–	27
(Average strength, 2,017. Daily sick, 98.)	Deaths	68	15	23	2	2	9	1	1	–	1
	Ratio per mille.										
	Admissions	1,267·7	19·2	633·1	27·8	96·2	50·1	0·5	1·5	–	13·4
	Deaths	33·7	7·4	11·4	1·0	1·0	4·5	0·5	0·5	–	0·5
BOMBAY	Admissions	2,195	38	1,124	44	157	97	1	2	–	26
(Average strength, 1,690. Daily sick, 90.)	Deaths	66	14	23	2	2	9	1	1	–	1
	Ratio per mille.										
	Admissions	1,298·8	22·5	665·1	26·0	92·9	57·4	0·6	1·2	–	15·4
	Deaths	39·0	8·3	13·6	1·2	1·2	5·3	0·6	0·6	–	0·6
TANA	Admissions	362	1	153	12	37	4	–	1	–	1
(Average strength, 327. Daily sick, 8.)	Deaths	2	1	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,107·0	3·1	467·9	36·7	113·1	12·2	–	3·1	–	3·1
	Deaths	6·1	3·1	–	–	–	–	–	–	–	–

XXVI.—Belgaum Brigade.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
BRIGADE (Average strength, 2,971. Daily sick, 108.)	Admissions	2,535	4	1,089	53	77	9	–	7	–	53
	Deaths	33	3	4	2	3	1	–	3	–	3
	Ratio per mille.										
	Admissions	853·2	1·3	366·5	17·8	25·9	3·0	–	2·4	–	17·8
	Deaths	11·1	1·0	1·3	0·7	1·0	0·3	–	1·0	–	1·0
KOLHAPOOR (Average strength, 605. Daily sick, 23·0.)	Admissions	279	2	96	12	11	2	–	–	–	8
	Deaths	13	1	1	1	3	1	–	–	–	–
	Ratio per mille.										
	Admissions	461·2	3·3	158·7	19·8	18·2	3·3	–	–	–	13·2
	Deaths	21·5	1·6	1·6	1·6	5·0	1·6	–	–	–	–
KULUDGHEE (Average strength, 370. Daily sick, 18·0.)	Admissions	160	1	43	3	20	1	–	–	–	6
	Deaths	2	1	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	432·4	2·7	116·2	8·1	54·1	2·7	–	–	–	16·2
	Deaths	5·4	2·7	–	–	–	–	–	–	–	–
BELGAUM (Average strength, 1,275. Daily sick, 46.)	Admissions	1,554	–	769	21	23	5	–	7	–	24
	Deaths	10	–	3	–	–	–	–	3	–	1
	Ratio per mille.										
	Admissions	1,215·7	–	603·1	16·5	18·0	3·9	–	5·5	–	18·8
	Deaths	7·8	–	2·3	–	–	–	–	2·3	–	0·8
DHARWAR (Average strength, 706. Daily sick, 21·0.)	Admissions	518	1	173	16	23	1	–	–	–	15
	Deaths	8	1	–	1	–	–	–	–	–	2
	Ratio per mille.										
	Admissions	733·7	1·4	245·0	22·7	32·6	1·4	–	–	–	21·2
	Deaths	11·3	1·4	–	1·4	–	–	–	–	–	2·8
CARWAR (for 3 months) (Average monthly strength, 60. Daily sick, 1·0 (annual).	Admissions	24	–	8	1	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,600	–	533·3	66·7	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–

XXVII.—Aden Brigade.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
BRIGADE	Admissions	1,254	11	304	40	83	153	–	1	5	61
(Average strength, 1,037. Daily sick, 68.)	Deaths	24	5	2	–	2	6	–	1	–	2
	Ratio per mille.										
	Admissions	1,209·3	10·6	293·2	38·6	80·0	147·5	–	1·0	4·8	58·8
	Deaths	23·1	4·8	1·9	–	1·9	5·8	–	1·0	–	1·9
ADEN	Admissions	1,098	11	287	32	75	119	–	–	5	58
(Average strength, 962. Daily sick, 64.)	Deaths	20	5	1	–	2	5	–	–	–	2
	Ratio per mille.										
	Admissions	1,140·3	11·4	298·3	33·3	78·0	123·7	–	–	5·2	60·3
	Deaths	20·8	5·2	1·0	–	2·1	5·2	–	–	–	2·1
PERIM	Admissions	156	–	17	8	8	34	–	1	–	3
(Average strength, 75. Daily sick, 4.)	Deaths	4	–	1	–	–	1	–	1	–	–
	Ratio per mille.										
	Admissions	2,080·0	–	226·7	106·7	106·7	453·3	–	13·3	–	40·
	Deaths	53·3	–	13·3	–	–	13·3	–	13·3	–	–

XXVIII.—China.

HONG KONG (for 6 months)	Admissions	299	–	110	2	20	–	–	2	–	3
(Average monthly strength, 566. Daily sick, 11 (annual).)	Deaths	3	–	–	–	1	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,056·5	–	388·7	7·1	70·7	–	–	7·1	–	10·6
	Deaths	10·6	–	–	–	3·5	–	–	–	–	–
SHANGHAI (for 9 months)	Admissions	345	–	96	5	11	–	1	–	–	81
(Average monthly strength, 677. Daily sick, 31 (annual).)	Deaths	5	–	3	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	679·1	–	189·0	9·8	21·7	–	2·0	–	–	159·4
	Deaths	9·8	–	5·9	–	–	–	–	–	–	–

XXIX.—Troops Marching.

(Average strength, 92. Daily sick)	Admissions	308	–	244	–	–	20	–	1	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	3,347·8	–	2,652·2	–	–	217·4	–	11·0	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–

DEATHS Reported in the CIVIL POPULATION of the Collectorate of *Tana* during the Year 1865.

Reported Population, 900,000. Area—Square Miles, 5,400.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of Caste	3,385	2,953	89	67	3,004	2,327	303	183	177	113	1,330	956	8,288	6,599
Hindoo Low Caste	554	468	10	8	430	319	55	18	26	26	162	114	1,237	953
Jain	4	3	–	–	13	2	1	1	1	–	5	1	24	7
Moosulman	183	165	6	2	163	99	10	6	7	3	65	35	434	310
Parsee	5	4	1	–	6	3	1	2	–	–	9	3	22	12
Jew	1	2	1	–	9	10	–	–	–	–	5	1	16	13
Christian	106	101	17	7	64	56	11	7	5	5	88	60	281	236
Unknown Race or Caste	2	–	–	–	7	4	–	2	–	1	28	40	37	21
All Races and Castes	4,240	3,696	124	84	3,686	2,820	381	219	216	148	1,692	1,184	10,339	8,151
1865:														
January	299	242	11	3	421	362	46	21	18	8	226	149	1,021	785
February	109	134	23	18	367	269	35	19	20	13	197	124	751	577
March	215	172	18	18	420	314	34	18	14	9	204	135	905	666
April	405	296	34	20	366	245	35	23	36	16	157	106	1,033	706
May	1,196	1,012	11	6	188	159	21	19	14	12	126	88	1,556	1,296
June	1,320	1,135	5	7	224	158	48	29	22	11	146	118	1,765	1,458
July	369	323	7	4	213	142	42	28	14	11	122	88	767	596
August	202	264	4	3	304	238	31	22	12	12	155	144	708	683
September	47	56	2	3	307	224	33	19	18	13	122	78	529	393
October	48	44	3	1	255	213	20	6	13	14	102	48	441	326
November	26	13	5	1	305	228	22	7	19	13	62	52	439	314
December	4	5	1	–	316	268	14	8	16	16	73	54	424	351
YEAR	4,240	3,696	124	84	3,686	2,820	381	219	216	148	1,692	1,184	10,339	8,151

DEATHS Reported in the CIVIL POPULATION of the Collectorate of *Surat* during the Year 1865.

Reported Population, 792,638. Area—Square Miles, 2,919.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of Caste	2,078	2,072	8	15	999	783	45	14	33	22	2,332	1,968	5,495	4,874
Hindoo Low Caste	2,115	1,981	18	18	580	436	26	11	19	11	1,908	1,671	4,666	4,128
Jain	26	7	1	–	5	11	–	–	–	–	24	13	56	31
Moosulman	596	473	1	–	212	163	8	4	29	3	561	424	1,407	1,067
Parsee	50	61	–	–	15	14	2	–	–	1	38	40	105	116
Jew	1	–	–	–	–	–	–	–	–	–	–	–	1	–
Christian	2	1	–	–	2	1	–	–	–	–	–	1	4	3
Unknown Race or Caste	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	4,868	4,595	28	33	1,813	1,408	81	29	81	37	4,863	4,117	11,734	10,219
1865:														
January	18	11	–	–	304	267	7	1	2	1	236	177	567	457
February	21	14	4	3	222	166	1	–	–	–	206	139	454	322
March	132	86	1	–	394	275	10	1	3	1	281	212	821	575
April	174	124	14	13	257	215	8	2	8	9	296	195	757	558
May	1,320	1,329	6	4	215	200	33	13	1	3	238	192	1,813	1,741
June	1,831	1,679	1	4	200	142	–	1	4	1	190	165	2,226	1,992
July	912	976	1	–	11	4	–	–	23	1	516	409	1,463	1,390
August	355	280	1	9	59	41	–	–	12	4	629	547	1,056	881
September	81	73	–	–	58	40	–	–	10	3	521	500	670	616
October	7	14	–	–	37	29	–	–	6	1	562	537	612	581
November	8	4	–	–	34	18	–	–	5	8	639	601	686	631
December	9	5	–	–	22	11	22	11	7	5	549	443	609	475
YEAR	4,868	4,595	28	33	1,813	1,408	81	29	81	37	4,863	4,117	11,734	10,219

DEATHS Reported in the CIVIL POPULATION of the Collectorate of *Kaira*, during the Year 1865.

Reported Population, 586,606. Area—Square miles, 1,375.	Cholera.		Small Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of Caste	2,620	2,021	96	93	746	612	617	474	50	51	3,427	2,632	7,556	5,883
Hindoo Low Caste	261	207	8	13	69	60	52	28	6	9	230	149	626	466
Jain	14	13	–	–	2	–	3	–	–	–	11	11	30	24
Moosulman	350	314	12	19	75	48	51	33	5	4	257	201	750	619
Parsee	–	–	–	–	–	–	–	–	–	–	10	7	10	7
Jew	–	–	–	1	–	–	–	–	–	–	–	–	–	1
Christian	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race or Caste	–	–	–	–	–	–	–	–	–	1	–	–	–	1
All Races and Castes	3,245	2,555	116	126	892	720	723	535	61	65	3,935	3,000	8,972	7,001
1865:														
January	–	–	18	18	30	32	55	41	4	4	305	262	412	357
February	73	42	21	30	42	27	42	25	6	–	284	213	468	337
March	49	31	28	26	37	19	50	47	9	8	359	258	532	389
April	42	24	22	22	36	19	43	36	5	5	281	248	429	354
May	403	304	13	13	15	13	42	32	7	4	319	238	799	604
June	1,252	907	6	6	24	16	62	46	4	4	369	300	1,717	1,279
July	914	793	3	5	40	31	78	47	8	13	374	325	1,417	1,214
August	477	421	3	2	81	78	118	75	3	7	557	378	1,239	961
September	27	25	–	2	52	52	80	64	7	8	474	316	640	467
October	5	6	2	2	41	37	58	47	3	6	395	295	504	393
November	1	2	–	–	304	248	56	42	3	2	106	71	470	365
December	2	–	–	–	190	148	39	33	2	4	112	96	345	281
YEAR	3,245	2,555	116	126	892	720	723	535	61	65	3,935	3,000	8,972	7,001

DEATHS Reported in the CIVIL POPULATION of the Collectorate of *Khandesh*, during the Seven Months from June to December 1865.

Reported Population, 822,476. Area—Square miles, 16,597.	Cholera.		Small Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of Caste	5,681	4,684	119	88	2,556	2,086	1,113	841	195	175	1,036	938	10,700	8,812
Hindoo Low Caste	1,748	1,300	36	36	470	336	161	109	90	94	283	183	2,788	2,058
Jain	13	18	1	–	5	5	2	3	1	–	2	1	24	27
Moosulman	673	472	7	2	355	301	80	74	12	8	127	134	1,254	991
Parsee	1	–	–	–	–	–	–	–	–	–	–	–	1	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	–	1	–	–	–	1	–
Unknown Race or Caste	8	–	–	–	–	–	–	–	–	–	–	1	8	1
All Races and Castes	8,124	6,474	163	126	3,386	2,728	1,356	1,027	299	277	1,448	1,257	14,776	11,889
1865:														
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	–	–	–	–	–	–	–	–	–	–
May	–	–	–	–	–	–	–	–	–	–	–	–	–	–
June	3,364	2,773	34	26	256	206	148	115	62	52	133	108	3,997	3,280
July	2,600	2,104	32	27	683	545	313	256	69	68	361	260	4,058	3,260
August	1,851	1,420	67	40	840	697	373	296	89	81	398	340	3,618	2,874
September	272	155	1	3	687	542	273	220	55	56	322	349	1,610	1,325
October	32	19	7	8	363	303	114	55	10	11	112	105	638	501
November	2	1	3	6	335	278	80	54	5	4	60	39	485	382
December	3	2	19	16	222	157	55	31	9	5	62	56	370	267
YEAR	8,124	6,474	163	126	3,386	2,728	1,356	1,027	299	277	1,448	1,257	14,776	11,889

DEATHS Reported in the CIVIL POPULATION of the Collectorate of *Ahmednuggur* during the Year 1865.

Reported Population, 1,252,789. Area—Square Miles, 11,179.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of Caste	7,011	5,897	219	193	4,182	3,412	1,310	947	293	239	2,349	2,135	15,364	12,823
Hindoo Low Caste	1,080	895	27	21	787	586	200	131	40	43	333	306	2,467	1,982
Jain	35	16	2	–	38	16	6	4	–	1	13	13	94	50
Moosulman	330	310	20	16	381	319	98	74	34	21	237	255	1,100	995
Parsee	2	1	–	–	1	5	–	–	–	–	3	–	6	6
Jew	–	–	–	–	–	–	1	2	–	–	2	1	3	3
Christian	9	1	–	–	4	3	1	–	–	–	2	2	16	6
Unknown Race or Caste	17	5	–	–	5	6	3	1	–	1	5	3	30	16
All Races and Castes	8,484	7,125	268	230	5,398	4,347	1,619	1,159	367	305	2,944	2,715	19,080	15,881
1865:														
January	46	42	38	38	299	275	120	82	18	15	151	182	672	634
February	25	18	34	34	322	296	113	64	23	14	157	188	674	614
March	116	80	49	51	377	295	120	84	16	15	178	166	856	691
April	1,284	989	57	47	384	330	116	81	28	19	225	215	2,094	1,681
May	2,806	2,296	31	24	276	258	144	77	25	20	209	210	3,491	2,885
June	2,515	2,143	17	10	355	300	128	117	32	24	280	238	3,327	2,832
July	943	885	18	7	549	446	162	131	28	39	411	396	2,111	1,904
August	476	414	9	8	665	504	177	143	57	29	417	382	1,801	1,480
September	198	194	7	4	592	491	180	115	42	31	364	266	1,383	1,101
October	43	37	2	3	526	388	133	106	56	48	247	205	1,007	787
November	26	21	3	1	568	428	119	76	22	30	169	150	907	706
December	6	6	3	3	485	336	107	83	20	21	136	117	757	566
YEAR	8,484	7,125	268	230	5,398	4,347	1,619	1,159	367	305	2,944	2,715	19,080	15,881

DEATHS Reported in the CIVIL POPULATION of the Collectorate of *Poona* during the Year 1865.

Reported Population, 679,429. Area—Square Miles, 5,250.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of Caste	3,929	3,715	73	77	4,462	3,812	510	377	96	70	1,381	1,226	10,451	9,277
Hindoo Low Caste	667	530	18	12	656	564	68	41	17	3	166	122	1,592	1,272
Jain	6	6	1	–	23	6	–	1	–	–	3	5	33	18
Moosulman	121	135	11	3	294	224	35	22	6	4	100	82	567	470
Parsee	–	–	–	–	4	–	–	–	–	–	1	–	5	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	3	–	–	–	12	5	–	–	–	–	5	4	20	9
Unknown Race or Caste	1	1	1	1	4	2	–	–	–	–	4	–	10	4
All Races and Castes	4,727	4,387	104	93	5,455	4,613	613	441	119	77	1,660	1,439	12,678	11,050
1865:														
January	22	7	18	18	451	393	54	41	6	10	133	98	684	567
February	27	29	15	10	402	377	33	31	11	6	118	93	606	546
March	115	85	19	25	517	458	63	41	11	5	120	111	845	735
April	998	818	23	15	532	419	58	48	15	11	117	111	1,743	1,422
May	1,987	1,906	3	10	416	381	83	63	12	9	120	112	2,621	2,481
June	937	883	5	3	442	388	64	49	13	8	191	161	1,652	1,492
July	465	504	3	1	540	467	54	41	6	6	253	196	1,321	1,215
August	108	113	1	2	557	410	57	41	9	3	221	162	953	731
September	50	35	8	5	468	392	49	26	16	6	130	139	721	603
October	14	5	4	1	383	272	32	19	14	7	91	91	538	395
November	–	1	5	2	358	300	28	22	3	3	90	74	484	402
December	4	1	–	1	389	356	38	19	3	3	76	91	510	471
YEAR	4,727	4,387	104	93	5,455	4,613	613	441	119	77	1,660	1,439	12,678	11,050

DEATHS reported in the CIVIL POPULATION of the Sub-Collectorate of *Sholapoor* during the Year 1865.

Reported Population, 634,867. Area—Square Miles, 4,000.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	1,722	1,346	145	132	1,093	1,032	454	397	218	172	678	638	4,310	3,717
Hindoo, low caste	131	105	13	18	111	98	34	23	24	15	51	36	364	295
Jain	9	8	2	–	11	4	7	3	1	–	8	14	38	29
Moosulman	82	62	4	6	29	45	13	20	2	10	22	20	152	163
Parsee	1	2	–	–	–	–	–	–	–	–	–	–	1	2
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	3	–	–	–	–	–	1	–	–	–	–	–	4
Unknown race or caste	11	11	–	–	5	–	1	–	1	–	4	4	22	15
All Races and Castes	1,956	1,537	164	156	1,249	1,179	509	444	246	197	763	712	4,887	4,225
1865:														
January	5	7	25	29	123	100	30	25	30	5	50	50	263	226
February	5	3	35	34	88	75	23	17	17	19	51	58	219	206
March	64	54	39	24	112	110	25	20	22	17	60	59	322	284
April	512	395	28	35	109	113	22	26	23	29	60	53	754	651
May	725	545	3	5	99	97	33	24	21	24	66	56	947	751
June	288	222	11	11	103	104	30	38	24	11	90	84	546	470
July	228	164	14	6	137	110	78	44	25	13	109	81	591	418
August	91	108	1	2	90	137	76	88	10	15	97	101	365	451
September	31	28	1	4	121	99	80	67	16	12	82	67	331	277
October	4	5	3	1	105	104	45	34	12	7	55	47	224	198
November	1	6	4	5	86	83	33	36	8	6	28	45	160	181
December	2	–	–	–	76	47	34	25	38	29	15	11	165	112
YEAR	1,956	1,537	164	156	1,249	1,179	509	444	246	197	763	712	4,887	4,225

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Satara* during the Year 1865.

Reported Population, 858,022. Area—Square Miles, 7,430.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	3,155	2,717	25	31	5,998	5,485	1,805	1,605	179	173	1,786	1,598	12,948	11,609
Hindoo, low caste	419	333	13	11	922	781	186	158	30	17	212	194	1,782	1,494
Jain	12	12	–	–	53	49	43	25	3	1	23	23	134	110
Moosulman	125	91	2	3	309	280	81	71	2	8	90	79	609	532
Parsee	1	–	–	–	6	–	–	1	1	–	2	–	10	1
Jew	1	–	–	–	1	1	1	1	–	–	1	–	4	2
Christian	5	–	–	–	4	1	1	–	3	–	1	1	14	2
Unknown race or caste	5	2	–	–	5	5	–	–	2	1	5	1	17	9
All Races and Castes	3,723	3,155	40	45	7,298	6,602	2,117	1,861	220	200	2,120	1,896	15,518	13,759
1865:														
January	5	4	15	6	497	440	99	67	16	17	183	168	815	702
February	1	4	6	6	462	395	54	61	9	8	141	129	673	603
March	4	6	4	13	584	536	82	67	11	14	160	141	845	777
April	578	417	4	5	570	551	127	91	31	19	196	167	1,506	1,250
May	1,422	1,226	5	4	655	591	202	175	17	23	244	223	2,545	2,242
June	1,282	1,119	3	4	680	620	349	334	15	20	221	191	2,550	2,288
July	365	315	–	3	754	684	392	381	24	19	220	203	1,755	1,605
August	47	39	1	–	702	647	280	212	19	14	156	161	1,205	1,073
September	7	16	–	1	787	672	201	171	19	15	161	147	1,175	1,022
October	3	2	–	–	533	527	129	119	23	15	156	123	844	786
November	6	–	1	–	510	487	123	111	16	17	143	120	799	735
December	3	7	1	3	564	452	79	72	20	19	139	123	806	676
YEAR	3,723	3,155	40	45	7,298	6,602	2,117	1,861	220	200	2,120	1,896	15,518	13,759

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Kulughee* during the Year 1865.

Reported Population, 563,123. Area—Square Miles, 6,500.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	1,310	1,134	243	220	1,376	1,037	388	303	176	116	1,037	758	4,530	3,568
Hindoo, low caste	96	97	18	10	144	116	25	23	22	6	106	93	411	345
Jain	8	1	–	2	8	6	3	1	–	–	4	5	23	15
Moosulman	198	183	20	24	166	119	47	36	24	15	92	70	547	447
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	1	3	–	–	–	2	–	–	1	–	–	–	2	5
Unknown race or caste	8	16	3	6	9	9	6	3	1	–	3	2	30	36
All Races and Castes	1,621	1,434	284	262	1,703	1,289	469	366	224	137	1,242	928	5,543	4,416
1865:														
January	2	1	46	33	143	93	27	14	17	14	95	72	330	227
February	4	1	33	31	129	77	14	13	17	9	86	72	282	203
March	3	1	28	29	136	101	20	20	22	14	81	57	290	222
April	226	166	28	31	183	118	36	18	26	20	119	88	618	441
May	688	628	55	40	167	136	58	43	30	14	151	91	1,149	952
June	468	443	39	33	189	159	50	27	35	11	155	129	936	802
July	193	166	7	10	147	124	37	28	10	9	146	117	540	454
August	12	15	12	10	150	133	72	66	24	12	98	63	368	299
September	21	11	1	2	102	69	26	36	16	10	83	66	249	194
October	4	1	12	18	119	87	39	37	9	9	87	68	270	217
November	1	1	17	16	131	103	48	32	8	5	79	66	284	227
December	–	–	6	9	107	88	42	32	10	10	62	39	227	178
YEAR	1,621	1,434	284	262	1,703	1,289	469	366	224	137	1,242	928	5,543	4,416

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Belgaum* during the Year 1865.

Reported Population, 707,537. Area—Square Miles, 4,480.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	516	432	157	208	2,617	1,848	187	116	57	75	1,781	1,505	5,315	4,184
Hindoo, low caste	87	72	25	30	291	228	33	23	4	4	232	167	672	524
Jain	33	10	13	19	107	73	19	11	5	4	209	132	386	249
Moosulman	53	41	37	23	275	196	15	6	8	7	165	121	553	394
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	2	–	–	–	17	16	–	2	1	–	2	5	22	23
Unknown race or caste	1	–	10	10	34	26	2	2	1	1	46	35	94	74
All Races and Castes	692	555	242	290	3,341	2,387	256	160	76	91	2,435	1,965	7,042	5,448
1865:														
January	1	1	25	25	316	227	28	15	5	9	204	135	579	412
February	–	–	42	38	207	273	12	18	–	4	162	168	423	501
March	–	–	59	75	367	258	24	16	7	4	219	183	676	536
April	5	–	42	63	320	225	38	11	6	5	201	168	612	472
May	107	89	26	38	348	227	19	10	18	10	250	243	768	617
June	372	254	20	28	329	228	30	16	5	10	360	280	1,116	816
July	188	189	16	7	364	246	21	21	14	19	355	255	958	737
August	16	14	2	6	257	198	22	18	5	13	216	172	518	421
September	3	8	1	2	220	127	19	9	5	5	161	127	409	278
October	–	–	–	–	62	41	2	–	2	–	14	11	80	52
November	–	–	2	–	273	187	23	17	6	8	138	115	442	327
December	–	–	7	8	278	150	18	9	3	4	155	108	461	279
YEAR	692	555	242	290	3,341	2,387	256	160	76	91	2,435	1,965	7,042	5,448

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Dharwar* during the Year 1865.

Reported Population, 782,465. Area—Square Miles, 6,070.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	511	396	461	466	2,911	2,336	1,369	1,094	158	112	2,068	1,959	7,478	6,363
Hindoo, low caste	69	56	70	95	450	381	221	205	17	16	276	298	1,103	1,051
Jain	–	2	6	5	49	40	17	3	2	4	19	17	93	71
Moosulman	88	68	91	102	388	287	160	114	30	17	271	301	1,028	889
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	1	–	–	–	–	–	1	–
Unknown race or caste	–	1	1	–	1	1	1	1	–	–	3	–	6	3
All Races and Castes	668	523	629	668	3,799	3,045	1,769	1,417	207	149	2,637	2,575	9,709	8,377
1865:														
January	–	–	108	112	339	235	105	84	17	11	135	150	704	592
February	–	–	107	127	343	253	131	91	22	13	162	159	765	643
March	–	–	118	121	352	304	148	103	17	8	207	216	842	752
April	27	22	102	108	367	252	162	121	17	22	196	201	871	726
May	76	62	70	67	284	245	164	144	25	12	265	253	884	783
June	203	167	57	46	237	213	223	171	38	22	356	354	1,114	973
July	160	129	26	42	315	244	210	147	16	13	357	327	1,084	902
August	90	70	13	22	269	231	131	143	10	7	278	267	791	740
September	37	17	13	10	272	217	141	115	12	8	206	182	681	549
October	–	–	7	1	298	233	112	100	10	18	184	182	611	534
November	52	40	5	4	363	308	120	97	7	6	165	146	712	601
December	23	16	3	8	360	310	122	101	16	9	126	138	650	582
YEAR	668	523	629	668	3,799	3,045	1,769	1,417	207	149	2,637	2,575	9,709	8,377

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Canara* during the Year 1865.

Reported Population, 394,040. Area—Square Miles, 4,300.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	79	68	83	88	2,494	2,108	245	154	73	50	613	503	3,587	2,971
Hindoo, low caste	67	59	15	18	345	336	46	48	16	6	93	92	582	559
Jain	2	1	2	3	136	82	12	7	2	2	27	26	181	121
Moosulman	14	7	7	4	136	104	11	4	8	2	46	47	222	168
Parsee	–	–	–	–	–	1	–	–	–	–	1	–	1	1
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	12	17	2	2	83	73	7	4	7	3	20	15	131	114
Unknown race or caste	1	–	–	–	13	5	–	1	1	–	3	2	18	8
All Races and Castes	175	152	109	115	3,207	2,709	321	218	107	63	803	685	4,722	3,942
1865:														
January	11	3	12	5	358	300	18	7	3	6	60	65	462	386
February	5	4	4	10	280	230	30	14	8	1	55	35	382	294
March	10	8	15	13	301	258	46	17	8	1	89	81	469	378
April	8	7	8	14	233	175	22	14	8	4	55	61	334	275
May	2	–	10	8	214	176	17	19	4	4	45	53	292	260
June	19	21	12	16	225	211	25	14	10	13	66	37	357	312
July	21	20	16	14	298	269	27	37	6	2	88	63	456	405
August	21	14	7	14	244	223	27	20	15	9	72	69	386	349
September	23	19	6	4	287	219	32	20	10	7	78	59	436	328
October	30	33	5	9	235	188	30	20	15	9	58	50	373	309
November	10	10	8	3	220	220	27	15	11	2	78	66	354	316
December	15	13	6	5	312	240	20	21	9	5	59	46	421	330
YEAR	175	152	109	115	3,207	2,709	321	218	107	63	803	685	4,722	3,942

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Rutnaghery* during the Year 1865.

Reported Population, 685,372. Area—Square Miles, 5,808.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	727	728	141	106	4,839	4,334	475	246	133	100	1,895	1,852	8,210	7,366
Hindoo, low caste	145	129	38	26	566	462	54	26	17	9	191	154	1,011	806
Jain	1	1	–	–	13	7	1	–	–	–	8	6	23	14
Moosulman	221	295	60	44	314	249	27	9	14	5	108	89	744	691
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	1	–	–	–	–	–	–	–	–	–	–	–	1	–
Christian	1	1	–	–	10	15	2	2	–	1	6	9	19	28
Unknown race or caste	–	–	–	–	1	1	–	–	–	–	2	–	3	1
All Races and Castes	1,096	1,154	239	176	5,743	5,068	559	283	164	115	2,210	2,110	10,011	8,906
1865:														
January	57	47	47	38	490	419	51	29	19	6	183	183	847	722
February	35	37	48	25	445	383	57	28	9	7	153	175	747	655
March	49	46	33	25	548	483	51	31	10	6	201	179	892	770
April	84	79	38	29	429	367	52	19	17	7	155	144	775	645
May	142	139	21	17	509	462	49	26	19	9	172	175	912	828
June	311	313	15	11	489	420	42	27	16	14	153	131	1,026	916
July	250	308	10	14	638	617	43	32	16	18	234	241	1,191	1,230
August	71	83	5	3	534	512	38	23	11	11	207	211	866	843
September	35	24	2	2	504	392	45	25	8	8	220	197	814	648
October	24	29	7	5	380	370	47	13	17	8	182	163	657	588
November	18	35	4	5	343	327	46	19	7	6	158	148	576	540
December	20	14	9	2	434	316	38	11	15	15	192	163	708	521
YEAR	1,096	1,154	239	176	5,743	5,068	559	283	164	115	2,210	2,110	10,011	8,906

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Kurachee* during the Five Months from August to December 1865.

Reported Population, 340,000. Area—Square Miles, 19,240.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	61	37	–	–	161	94	8	7	9	–	32	9	271	147
Hindoo, low caste	1	2	–	–	18	7	–	1	2	–	2	3	23	13
Jain	–	–	–	–	–	–	1	–	–	–	–	–	1	–
Moosulman	131	68	1	–	472	299	28	12	39	16	62	40	733	435
Parsee	–	–	–	–	1	1	–	–	–	–	–	–	1	1
Jew	–	–	–	–	–	–	–	–	–	–	1	–	1	–
Christian	–	–	–	–	–	2	–	–	–	–	–	–	–	2
Unknown race or caste	–	–	–	–	–	–	–	–	1	–	–	–	1	–
All Races and Castes	193	107	1	–	652	403	37	20	51	16	97	52	1,031	598
1865:														
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	–	–	–	–	–	–	–	–	–	–
May	–	–	–	–	–	–	–	–	–	–	–	–	–	–
June	–	–	–	–	–	–	–	–	–	–	–	–	–	–
July	–	–	–	–	–	–	–	–	–	–	–	–	–	–
August	101	68	–	–	88	52	10	6	15	4	20	11	234	141
September	58	32	–	–	91	45	9	4	14	6	17	5	189	92
October	27	5	–	–	104	75	9	3	11	5	15	15	166	103
November	7	2	1	–	131	99	–	4	4	1	17	8	160	114
December	–	–	–	–	238	132	9	3	7	–	28	13	282	148
YEAR	193	107	1	–	652	403	37	20	51	16	97	52	1,031	598

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Hyderabad* during the Six Months from July to December 1865.

Reported Population, 630,300. Area—Square Miles, 10,774.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	287	165	1	2	274	217	30	18	8	6	82	67	682	475
Hindoo, low caste	2	2	–	–	15	8	2	1	–	–	8	5	27	16
Jain	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulman	882	509	3	–	539	358	41	30	91	37	258	167	1,814	1,101
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	1	–	–	–	1
Christian	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race or caste	3	–	–	–	1	1	–	–	–	1	–	–	4	2
All Races and Castes	1,174	676	4	2	829	584	73	49	99	45	348	239	2,527	1,595
1865:														
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	–	–	–	–	–	–	–	–	–	–
May	–	–	–	–	–	–	–	–	–	–	–	–	–	–
June	–	–	–	–	–	–	–	–	–	–	–	–	–	–
July	854	459	–	–	53	46	4	2	30	8	41	17	982	532
August	261	172	–	–	85	65	13	10	24	15	76	43	459	305
September	59	45	4	1	138	93	7	2	21	10	37	41	266	192
October	–	–	–	1	145	94	1	1	12	4	34	18	192	118
November	–	–	–	–	194	123	20	16	8	6	95	63	317	208
December	–	–	–	–	214	163	28	18	4	2	65	57	311	240
YEAR	1,174	676	4	2	829	584	73	49	99	45	348	239	2,527	1,595

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Shikarpoor* during the Six Months from July to December 1865.

Reported Population, 650,304. Area—Square Miles, 9,042.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	4	3	13	6	138	143	41	38	1	2	54	40	251	232
Hindoo, low caste	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Jain	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulman	16	14	5	2	122	123	56	21	8	3	46	33	253	196
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	1	–	–	–	–	–	1	–
Unknown race or caste	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	20	17	18	8	260	266	98	59	9	5	100	74	505	429
1865:														
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	–	–	–	–	–	–	–	–	–	–
May	–	–	–	–	–	–	–	–	–	–	–	–	–	–
June	–	–	–	–	–	–	–	–	–	–	–	–	–	–
July	13	10	–	–	41	34	4	1	3	2	12	8	73	55
August	7	7	–	–	29	40	–	–	3	1	23	13	62	61
September	–	–	–	–	39	38	2	–	1	–	8	10	50	48
October	–	–	2	2	40	32	35	27	1	–	18	8	96	69
November	–	–	6	1	81	77	3	2	1	–	15	8	106	88
December	–	–	10	5	30	45	54	29	–	2	24	27	118	108
YEAR	20	17	18	8	260	266	98	59	9	5	100	74	505	429

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Upper Sind* during the Six Months from July to December 1865.

Reported Population, 47,955. Area—Square Miles, 2,147.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	–	–	–	–	62	55	1	3	2	–	24	23	89	81
Hindoo, low caste	–	–	–	–	10	11	–	–	–	2	–	–	10	13
Jain	–	–	–	–	–	–	–	–	–	–	1	–	1	–
Moosulman	–	–	–	–	154	100	10	11	11	10	73	39	248	160
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Unknown race or caste	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	–	–	–	–	226	167	11	14	13	12	98	62	348	255
1865:														
January	–	–	–	–	–	–		–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	–	–	–	–	–	–	–	–	–	–
May	–	–	–	–	–	–	–	–	–	–	–	–	–	–
June	–	–	–	–	–	–	–	–	–	–	–	–	–	–
July	–	–	–	–	71	62	3	–	4	2	67	37	145	101
August	–	–	–	–	30	18	–	–	3	7	11	7	44	32
September	–	–	–	–	22	21	–	–	3	2	20	16	45	39
October	–	–	–	–	15	14	1	–	2	1	–	1	18	16
November	–	–	–	–	51	27	5	8	1	–	–	–	57	35
December	–	–	–	–	37	25	2	6	–	–	–	1	39	32
YEAR	–	–	–	–	226	167	11	14	13	12	98	62	348	255

DEATHS reported in the CIVIL POPULATION of *Thur* and *Parkur* during the Six Months from July to December 1865.

Reported Population, 127,035. Area—Square Miles, 13,000.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cause.		All Causes.	
RACES.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoo of caste	–	–	3	3	84	69	1	2	–	–	10	6	98	80
Hindoo, low caste	–	–	–	1	48	64	–	1	–	–	8	1	56	67
Jain	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulman	–	–	–	–	58	52	2	2	–	1	27	5	87	60
Parsee	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race or caste	–	–	–	–	–	–	–	1	–	–	5	1	5	2
All Races and Castes	–	–	3	4	190	185	3	6	–	1	50	14	246	210
1865:														
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	–	–	–	–	–	–	–	–	–	–
May	–	–	–	–	–	–	–	–	–	–	–	–	–	–
June	–	–	–	–	–	–	–	–	–	–	–	–	–	–
July	–	–	–	–	–	–	–	–	–	–	4	1	4	1
August	–	–	–	–	–	–	–	–	–	–	18	7	18	7
September	–	–	–	–	9	10	1	1	–	–	14	5	24	16
October	–	–	–	–	12	14	1	–	–	1	9	1	22	16
November	–	–	–	–	98	102	1	2	–	–	1	–	100	104
December	–	–	3	4	71	59	–	3	–	–	4	–	78	66
YEAR	–	–	3	4	190	185	3	6	–	1	50	14	246	210

RETURN of CASUALTIES by VIOLENCE among the CIVIL POPULATION, reported by the Superintendents of Police in the different Collectorates of the *Bombay* Presidency during the Year 1865.

	Murder.			Homicide.			Suicide. By Drowning. In Well.		In Tank.		By other Means.		Killed by Wild Beasts.	Killed by Snake Bite.	Died from Hydrophobia.	Accidental Death. By Drowning. In Well.			In Tank.			In Sea or River.	From other known Cause.	Found Dead, Cause uncertain.			Total.	Attempted Suicide. By Drowning in Well or Tank.		By other Means.	
	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Men.	Women.	Men.	Women.	Persons.	Persons.	Persons.	Men.	Women.	Children.	Men.	Women.	Children.	Persons.	Persons.	Men.	Women.	Children.		Men.	Women.	Men.	Women.
Tana	6	–	1	1	–	–	2	14	–	1	10	4	8	41	1	17	59	13	8	8	4	42	72	3	–	–	315	–	–	1	–
Surat	9	2	1	2	–	–	8	14	2	–	5	–	5	32	– –	2	21	24	2	1	7	66	74	1	–	–	278	1	–	–	–
Kaira	9	8	3	2	2	–	6	13	–	1	7	7	1	51	3	5	18	14	1	6	25	3	65	1	–	–	251	1	4	–	–
Ahmedabad	9	1	1	–	–	1	10	7	–	–	10	13	– –	27	4	5	26	10	7	3	14	9	56	2	–	–	215	–	1	–	1
Punch Mahals	2	1	2	–	–	–	2	1	–	–	7	5	1	23	2	3	3	–	–	–	5	1	17	–	–	–	75	–	–	1	–
Khandesh	1	1	4	1	1	2	10	16	1	2	2	3	2	12	– –	23	28	15	1	–	3	23	34	4	–	2	191	–	2	2	–
Ahmednugur	–	4	–	–	1	–	6	15	–	2	2	1	1	5	– –	9	21	7	–	–	1	6	21	–	1	1	104	–	1	–	–
Poona	3	8	3	7	1	1	11	17	1	–	13	5	1	23	12	32	66	32	7	2	3	55	73	7	4	4	391	1	2	5	3
Nasik	1	2	–	–	–	–	1	2	–	–	2	–	3	3	1	4	6	8	1	–	–	13	16	–	–	–	63	–	1	2	1
Satara	8	1	1	1	–	–	3	18	2	1	8	6	60	37	1	22	48	34	–	4	3	47	56	1	–	–	362	–	–	4	4
Kuludghee	5	2	1	–	–	1	12	19	–	–	20	2	2	30	1	9	25	19	–	–	–	7	30	4	–	–	189	–	1	1	–
Belgaum	10	3	1	2	–	–	7	21	1	3	9	6	– –	33	– –	13	36	12	5	8	9	111	60	1	–	–	351	–	–	–	–
Dharwar	9	1	4	2	–	–	15	25	6	5	25	12	3	28	1	13	15	2	23	20	24	23	50	7	–	1	314	2	2	–	–
Canara	2	4	1	2	1	1	3	7	3	1	13	5	6	14	– –	1	8	17	3	3	11	35	47	5	2	–	195	1	–	–	–
Rutnagheree	4	1	1	–	–	–	2	4	–	2	7	3	5	119	– –	1	5	11	5	5	11	56	81	3	–	–	326	–	–	–	–
The following embrace only six months, July to December:																															
Kurachee	4	–	–	3	–	–	–	–	–	–	3	1	3	41	7	2	1	3	6	3	22	31	22	1	1	–	154	1	–	3	1
Hydrabad	6	6	1	2	–	–	–	–	–	–	1	2	1	77	7	10	–	2	23	6	45	16	51	6	2	–	264	–	–	–	1
Shikarpoo	8	4	2	–	–	–	–	–	–	1	2	2	1	33	– –	–	3	5	6	–	11	50	22	–	–	–	150	–	–	–	–
Upper Sind	2	–	–	–	–	–	–	–	–	–	–	–	– –	8	– –	–	–	–	2	1	7	2	2	1	–	–	25	–	–	–	–
Thur and Parkur	1	–	–	–	–	–	–	–	–	–	–	–	– –	35	4	2	–	–	8	–	7	2	398	–	1	–	458	–	1	–	1

Sickness and Deaths in Gaols in 1865.

GAOLS.	Average Number of Prisoners.	Daily Number of Sick.	Admissions into Hospital during the Year.	Deaths from all Causes.	Deaths from										Deaths from all Causes per Mille.
					Cholera.	Small-Pox.	Fever.	Dysentery.	Diarrhœa.	Hepatitis.	Icterus.	Scorbutus.	Phthisis.	Atrophia.	
Bombay - - -	455	15·0	564	11	3	–	1	3	1	–	–	–	–	–	24·2
Surat - - - -	219	5·7	215	18	4	–	4	2	3	1	–	–	1	3	82·2
Kaira - - - -	290	28·0	781	14	4	–	4	–	4	–	–	–	–	1	48·3
Ahmedabad - - -	520	42·7	960	138	14	–	82	5	16	3	5	–	1	4	265·4
Rajkote - - -	48	6·7	187	1	1	–	–	–	–	–	–	–	–	–	20·8
Dohud - - -	52	6·7	156	10	–	–	6	–	1	–	–	–	–	–	192·3
Dhoolia - - -	329	14·9	368	11	2	–	–	–	1	–	–	5	–	1	33·4
Ahmednugur - -	301	11·0	275	14	3	–	1	1	3	–	–	–	–	3	46·5
Poona - - - -	354	13·8	184	23	5	–	1	6	8	1	–	–	–	2	65·0
Satara - - - -	190	1·3	39	3	–	–	1	1	–	–	–	–	–	–	15·8
Kolhapoor - - -	105	5·7	142	4	–	–	2	–	2	–	–	–	–	–	38·1
Sholapoor - - -	156	11·4	188	3	–	–	–	–	–	–	–	–	–	–	19·2
Kuludghee - - -	50	4·0	147	–	–	–	–	–	–	–	–	–	–	–	—
Dharwar - - -	529	15·9	352	7	2	–	1	1	2	–	–	–	–	1	13·2
Honore - - -	174	9·1	407	11	7	–	1	2	1	–	–	–	–	–	63·2
Sawuntwaree - -	36	2·9	70	–	–	–	–	–	–	–	–	–	–	–	—
Rutnagheree - - -	256	13·4	455	8	–	–	1	–	3	–	–	–	–	–	31·2
Tana - - - - -	333	31·3	597	17	2	–	1	4	–	–	–	2	–	–	51·1
Kurachee - - -	489	22·6	430	18	1	–	2	–	11	–	–	–	–	–	36·8
Hydrabad - - -	405	19·2	883	104	8	–	22	11	48	–	–	2	–	–	256·8
Shikarpoor - - -	617	16·8	630	18	–	–	9	–	2	–	–	–	–	2	29·2
Aden - - - - -	136	8·7	309	5	2	–	–	–	–	–	1	1	–	–	36·8
TOTAL - - -	6,044	306·8	8,339	438	58	–	139	36	106	5	6	10	2	17	72·4
Subsidiary Gaols, Gangs, and Lock-ups.															
Yerowda - - -	376	23·3	648	27	6	–	12	3	2	–	–	–	–	2	71·8
Thuggee Gaol - -	57	1·3	31	5	2	–	1	1	1	–	–	–	–	–	87·7
Bukur - - -	73	7·2	228	5	–	–	2	1	–	–	–	–	–	–	68·5
Karwar - - -	173	6·7	326	1	–	–	–	–	–	–	–	–	–	–	5·8
Thur and Parkur - -	137	9·4	561	1	–	–	1	–	–	–	–	–	–	–	7·3
Metro Canal - -	122	6·6	288	10	–	–	5	1	2	–	–	–	–	–	82·0
Sadra - - - - -	3	0·9	7	–	–	–	–	–	–	–	–	–	–	–	—
Ramjugah - - -	34	2·8	45	1	–	–	1	–	–	–	–	–	–	–	29·4
TOTAL - - -	975	58·2	2,134	50	8	–	22	6	5	–	–	–	–	2	51·2

APPENDIX.

Appendix I.

ANALYSES OF WATERS.

KIRKEE.	In Imperial Gallon.
Water from Moola River.	
Drawn 26th January 1865:	*Grs.*
Specific gravity - - - - 1000·17	
Organic matter - - - - - -	1·03
Chlorine - - - - - - -	1·24
Total Solids - -	13·16
Drawn 3rd March:	
Specific gravity - - - - 1000·12	
Organic matter - - - - - -	1·83
Chlorine - - - - - - -	·80
Total Solids - -	10·08
Drawn 6th April:	
Specific gravity - - - - 1000·27	
Organic matter - - - - - -	1·86
Chlorine - - - - - - -	·99
Total Solids - -	10·50
Drawn 9th May:	
Specific gravity - - - - 1000·22	
Organic matter - - - - - -	1·60
Chlorine - - - - - - -	·80
Total Solids - -	10·57
Drawn 16th June;	
Specific gravity - - - - 1000·17	
Total solids - - - - - -	6·65
Chloride - - - - - - -	·59
Lime calculated as carbonate - - -	2·99
Magnesia - ditto - - - - -	·84
Organic matter - - - - - -	1·46
Clark's degrees of hardness - -	3·9

POONA.	In Imperial Gallon.
Water from Moota Moola River below the City Bund.	
Drawn 9th January 1865:	
Specific gravity - - - - 1000·25	
Organic matter - - - - - -	2·89
Chlorine - - - - - - -	·99
Total Solids - -	8·40

Poona—*continued.*	In Imperial Gallon.
Water from Moota Moola River—*continued.*	
Drawn 8th February 1865:	*Grs.*
Specific gravity - - - - 1000·19	
Organic matter - - - - - -	1·99
Chlorine - - - - - - -	·72
Total Solids - -	10·08
From Moota River above the City Bund.	
Drawn on the 30th January:	
Specific gravity - - - 1000·15	
Organic matter - - - - -	4·97
Chlorine - - - - - - -	·85
Total Solids - -	8·96
Drawn 3rd March:	
Specific gravity - - - - 1000·12	
Organic matter - - - - - -	2·41
Chlorine - - - - - -	·97
Total Solids - -	10·71
Drawn 6th April:	
Specific gravity - - - - 1000·24	
Organic matter - - - - - -	2·36
Chlorine - - - - - - -	1·09
Total Solids - -	10·36
Drawn 9th May:	
Specific gravity - - - - 1000·33	
Organic matter - - - - - -	1·89
Chlorine - - - - - - -	·54
Total Solids - -	11·48
Drawn June:	
Specific gravity - - - - 1000·13	
Total solids - - - - - -	10·60
Chloride - - - - - - -	·67
Lime calculated as carbonate - - -	3·39
Magnesia - ditto - - - - -	·95
Organic matter - - - - - -	4·69
Clark's degrees of hardness - -	4·4

ANALYSES OF WATERS—*continued.*

POONA—*continued.* FROM the Moota Moola River near the Jamsetjee Bund.	In Imperial Gallon.
Drawn 7th March:	*Grs.*
Specific gravity - - - - 1000·21	
Organic matter - - - - - -	2·13
Chlorine - - - - - - -	·98
Total Solids - -	12·04
Drawn 6th April:	
Specific gravity - - - - 1000·33	
Organic matter - - - - - -	1·92
Chlorine - - - - - - -	·94
Total Solids - -	9·52
Drawn 9th May:	
Specific gravity - - - - 1000·29	
Organic matter - - - - - -	2·61
Chlorine - - - - - - -	·80
Total Solids - -	11·34
Drawn June:	
Specific gravity - - - - 1000·32	
Total solids - - - - - -	14·97
Chloride - - - - - - -	·57
Lime calculated as carbonate - - -	4·74
Magnesia - ditto - - - - -	1·05
Organic matter - - - - - -	2·20
Clark's degrees of hardness - -	5·8

POONA CANTONMENT.

WATER from Bamkee Baoree in the Gorpooree Lines.

Drawn 20th May:	
Specific gravity - - - - 1000·66	
Sulphate of lime - - - - - -	·79
Sulphate of magnesia - - - - -	·53
Nitrate of magnesia - - - - -	·58
Chloride of magnesia - - - - -	·46
Chloride of sodium - - - - -	7·00
Carbonate of soda - - - - -	1·68
Carbonate of lime - - - - -	11·23
Carbonate of magnesia - - - - -	4·64
Carbonate of iron - - - - -	·30
Silica - - - - - - -	3·36
Organic matter - - - - - -	·34
Total Solids - -	30·86
Total Solids by evaporation dried at 550°	30·24
Hardness Clark's scale - -	19·0

WATER from the Well in the Staff Lines, near to the Sappers' Lines.

Drawn 9th June:	
Specific gravity - - - - 1000·45	
Sulphate of lime - - - - - -	·86
Chloride of calcium - - - - -	·13
Nitrate of magnesia - - - - -	2·51
Nitrate of soda - - - - - -	·33

POONA CANTONMENT—*continued.* WATER from the Well, &c.—*continued.*	In Imperial Gallon.
	Grs.
Carbonate of soda - - - - -	3·51
Carbonate of lime - - - - -	3·11
Carbonate of magnesia - - - -	4·11
Carbonate of iron - - - - -	·37
Silica - - - - - - -	5·11
Organic matter - - - - - -	·98
Total Solids - -	21·02
Total Solids by evaporation - -	22·54
Clark's degrees of hardness - -	10·9

WATER from the Conduit that supplies the Artillery and Infantry Wunouree Barracks.

Drawn 9th June:	
Specific gravity - - - - 1000·42	
Sulphate of lime - - - - -	·33
Chloride of calcium - - - - -	1·63
Nitrate of lime - - - - - -	·61
Nitrate of magnesia - - - - -	·21
Carbonate of soda - - - - -	5·12
Carbonate of lime - - - - -	6·80
Carbonate of magnesia - - - -	2·43
Carbonate of iron - - - - -	·20
Silica - - - - - - -	7·49
Organic matter - - - - - -	·85
Total Solids - -	25·67
Total Solids by evaporation - -	23·38
Clark's degrees of hardness - -	12·7

WATER from the Nulla Well near the Site of the New Central Gaol at Yellowda, near Poona.

Drawn 3rd July:	
Specific gravity - - - - 1000·45	
Carbonate of calcium - - - - -	·06
Nitrate of lime - - - - - -	·66
Chloride of sodium - - - - -	3·04
Carbonate of soda - - - - -	4·04
Carbonate of lime - - - - -	7·77
Carbonate of magnesia - - - -	·69
Carbonate of iron - - - - -	·27
Silica - - - - - - -	2·38
Organic matter - - - - - -	·70
Total Solids - -	19·61
Total Solids by evaporation - -	23·17
Clark's degrees of hardness - -	9·0

ASEERGHUR.

WATER from Sukur Baoree which supplies the European Troops.

Drawn 14th March:	
Specific gravity - - - - 1000·31	
Organic matter - - - - - -	1·27
Chlorine - - - - - - -	2·14
Total Solids - -	26·04

ANALYSES OF WATERS—*continued.*

ASEERGHUR—*continued.*	In Imperial Gallon.
	Grs.
WATER from No. 1 Tank which filters into the Sukur Baoree.	
Drawn 14th March:	
Specific gravity - - - - 1000·27	
Organic matter - - - - - -	2·53
Chlorine - - - - - - -	3·18
Total Solids - -	20·23
WATER from Tank No. 2.	
Drawn 14th March:	
Specific gravity - - - - 1000·35	
Organic matter - - - - - -	4·16
Chlorine - - - - - - -	4·17
Total Solids - -	10·17
WATER from Tank No. 3, or Mess Tank.	
Drawn 14th March:	
Specific gravity - - - - 1000·14	
Organic matter - - - - - -	2·70
Chlorine - - - - - - -	1·76
Total Solids - -	18·06

AHMEDNUGUR.

WATER from the Bhingar Aqueduct, used by European Troops.	
Drawn 12th April:	
Specific gravity - - - - 1000·45	
Chloride of sodium - - - - -	1·00
Sulphate of lime - - - - - -	·10
Silicate of soda - Soda - - - 3·10 / Silicic acid - - 4·41	7·51
Carbonate of lime - - - - -	7·99
Carbonate of magnesia - - - -	2·52
Carbonate of iron - - - - -	·43
Organic matter - - - - - -	·14
Total Dry Solids - -	19·73
Water of hydration of silicate not expelled at 350° - - - - - -	2·95
Total Solids by evaporation mean of three experiments 23·17, 22·47, 22·40 - -	22·68
Total Solids by evaporation dried at about 650° - - - - - -	20·88

KURACHEE.

WATER from No. 1 Commissariat Well, which supplies the Artillery and Depôt Lines, and all the Hospitals, with the exception of that of the European Infantry.	In Imperial Gallon.
	Grs.
Drawn 27th April:	
Specific gravity - - - - 1001·01	
Sulphate of lime - - - - - -	1·85
Sulphate of magnesia - - - - -	2·81
Chloride of magnesium - - - -	·58
Chloride of sodium - - - - -	40·95
Carbonate of lime - - - - -	10·64
Carbonate of magnesia - - - -	1·16
Carbonate of iron - - - - -	·24
Silica - - - - - - - -	2·31
Organic matter - - - - - -	·66
Total Solids -	61·20
Total Solids by evaporation - -	(all expended)
Clark's degrees of hardness - -	16·4
No trace of nitric acid.	
No. 2 Well which supplies the Shipping at Munora and Keamaree Bundur.	
Drawn 27th April:	
Specific gravity - - - - 1001·11	
Sulphate of lime - - - - - -	4·63
Sulphate of magnesia - - - - -	4·10
Chloride of magnesium - - - -	1·13
Chloride of sodium - - - - -	54·87
Carbonate of lime - - - - -	14·61
Carbonate of magnesia - - - -	1·64
Carbonate of iron - - - - -	·43
Silica - - - - - - - -	3·85
Organic matter - - - - - -	·66
Total Solids - -	85·92
Total Solids by evaporation - -	86·59
Clark's degrees of hardness - -	24·6
No trace of nitric acid.	
No. 3 WELL which supplies the Napier Barracks.	
Drawn 27th April:	
Specific gravity - - - - 1000·80	
Sulphate of lime - - - - - -	·92
Sulphate of magnesia - - - - -	1·28
Chloride of sodium - - - - -	24·70
Sulphate of soda - - - - - -	4·32
Carbonate of lime - - - - -	9·46
Carbonate of magnesia - - - -	1·64
Carbonate of iron - - - - -	·20
Silica - - - - - - - -	2·38
Organic matter - - - - - -	·61
Total Solids - -	45·51
Total Solids by evaporation - -	47·95
Clark's degrees of hardness - -	13·2
No trace of nitric acid.	

ANALYSES OF WATERS—*continued.*

DEESA.

WATER from the Well which supplies the Barracks of the European Infantry Regiment (the Well is 17 Yards from the nearest Barrack).

Drawn 1st April.

	In Imperial Gallon.
	Grs.
Specific gravity	1000·24
Sulphate of lime	1·01
Sulphate of magnesia	·36
Nitrate of magnesia	·78
Nitrate of soda	2·48
Chloride of sodium	5·77
Carbonate of lime	20·95
Carbonate of magnesia	1·58
Carbonate of iron	·22
Silica	1·75
Organic matter	1·75
Total Solids	36·65
Total Solids by evaporation	(expended)
Clark's degrees of hardness	23·4

WATER from the Well which supplies the Hospital of the European Infantry Regiment (the Well is 29⅓ Yards from the Hospital Building).

Drawn 27th April 1865:

Specific gravity	1000·59
Sulphate of lime	·62
Nitrate of soda	2·80
Sulphate of soda	2·75
Chloride of sodium	7·22
Carbonate of lime	13·31
Carbonate of magnesia	2·66
Carbonate of iron	·32
Silica	4·27
Organic matter	2·34
Total Solids	36·29
Total Solids by evaporation	36·75
Clark's degrees of hardness	16·9

WATER from the Well which supplies the Royal Artillery Hospital (61 Yards distant).

Drawn 17th April:

Specific gravity	1000·51
Sulphate of lime	1·02
Chloride of calcium	·71
Chloride of magnesia	1·07
Chloride of sodium	2·47
Carbonate of soda	3·62
Carbonate of lime	9·34
Carbonate of magnesia	2·00
Carbonate of iron	·30
Silica	3·36
Organic matter	1·44
Total Solids	25·33
Total Solids by evaporation	26·95
Clark's degrees of hardness	14·2

DEESA—*continued.*

WATER from the Well which supplies the Royal Artillery Barracks (117 yards from the nearest Barrack).

Drawn 17th April:

	In Imperial Gallon.
	Grs.
Specific gravity	1000·44
Sulphate of lime	·86
Chloride of calcium	1·12
Chloride of magnesia	·30
Chloride of sodium	2·75
Carbonate of soda	3·08
Carbonate of lime	8·03
Carbonate of magnesia	2·85
Carbonate of iron	·30
Silica	4·13
Organic matter	1·44
Total Solids	24·86
Total Solids by evaporation	(expended)
Clark's degrees of hardness	13·4

MOUNT ABOO.

WATER from the new Well (64 Yards distant from the nearest Barrack).

Drawn 7th April 1865:

Specific gravity	1000·25
Sulphate of lime	·29
Chloride of calcium	·44
Chloride of sodium	1·52
Carbonate of soda	1·27
Carbonate of lime	3·48
Carbonate of magnesia	·24
Carbonate of iron	·27
Silica	1·54
Organic matter	·59
Total Solids	9·64
Total Solids by evaporation	10·64
Clark's degrees of hardness	4·4

BARODA.

WATER from the Well near the Artillery Hospital.

Drawn 23rd May:

Specific gravity	1001·1
Chloride of sodium	9·47
Sulphate of soda	1·94
Nitrate of soda	11·79
Carbonate of soda	2·63
Carbonate of lime	8·20
Carbonate of magnesia	14·75
Silica	4·20
Organic matter	·68
Total Solids	53·56
Total Solids by evaporation	53·76
Clark's degrees of hardness	25·7

ANALYSES OF WATERS—*continued.*

BARODA—*continued.* WATER from the Well from which Drinking Water for the Artillery Barracks is obtained.	In Imperial Gallon.
Drawn 23rd May:	*Grs.*
Specific gravity	1001·7
Chloride of sodium	8·44
Sulphate of soda	·54
Nitrate of soda	4·00
Carbonate of soda	26·13
Carbonate of lime	4·18
Carbonate of magnesia	5·17
Silica	2·87
Organic matter	1·08
Total Solids	52·41
Total Solids by evaporation	50·12
Clark's degrees of hardness	10·3

SATARA. WATER from the Well used by the Sick in Hospital.	In Imperial Gallon.
Drawn 15th April:	*Grs.*
Specific gravity	1000·5
Organic matter	0·13
Chloride	1·24
Total Solids	24·21
Clark's degrees of hardness	14·0
WATER from Well in the Government Garden used by the Troops in Barracks.	
Drawn 15th April:	
Specific gravity	1000·7
Organic matter	0·21
Chlorine	·54
Total Solids	20·25
Clark's degrees of hardness	15·7

Appendix II.

REPORT on the WATER SUPPLY of the CANTONMENTS of POONA and KIRKEE.

THE cantonment of Poona is on undulating ground, and at a distance varying from five furlongs to three miles from the Moota Moola River, into which the surface drainage of all the regimental lines naturally flows by watercourses which join it below the Jamsetjee Bund. The bund is 14 feet high, and the lines of the officers of the infantry at Wanouree, three miles distant, are at an elevation of 225 feet above its top, and the officers' lines at Gorpooree, above the lowest point of the cantonment, have an elevation of 67 feet. The river has but little water in it below the bund at any time, excepting when heavy rain is falling at its sources; and therefore the fall may be reckoned to its bed rather than to the top of the bund, and so reckoning it, there is a fall from all this part of the cantonment of about 80 feet in a mile.

2. The Sudder Bazar has its drainage into the Moota River, about a mile distant, and with a fall of about 76 feet, reckoned from the surface of the water when the sluices at the Jamsetjee Bund are closed. The rapidity with which the water must flow off, with a fall so great as is here shown, is unfavourable to the feeding of the wells.

3. The ground is in great part gravelly, with rock protruding in some places, and where there is soil it is seldom more than a foot or two deep. No cultivation is allowed in the cantonment, except in the gardens of the soldiers and in those round officers' bungalows.

4. The rock is igneous, a dolerite lying in nearly horizontal beds, which vary considerably in lithological character, some being a compact stone containing a few nodules or geodes of agate or quartz, others being amygdaloidal, and more or less rich in imbedded hydrous silicates, chiefly stilbite, scolecite or poonalite, and apophyllite.

5. The wells are as usual in depressions of the ground, as in such situations water is found nearer the surface than it is elsewhere. They are all excavated in the solid rock, and have the upper few feet of gravel lined with stone masonry; and being open draw wells from 10 to 34 feet in diameter, they are surrounded with a stone parapet wall; the ground around them is paved with stone.

6. There are 36 Government wells in the Poona cantonment to supply the various corps, and there is an aqueduct which conveys water to reservoirs in the Wanouree lines from Government wells near the village of Kondwa, about four miles distant.

7. The cantonment walls vary in depth from 30 to 67 feet. They give water in limited quantity, and only during part of the year. They are fed by the infiltration of the rain that falls in their near neighbourhood, and a year of partial drought has always been followed by much privation. Most of them dry up in ordinary years before or at the beginning of the hot season. In 1864 the rainfall was but 16½ inches, or only about two-thirds of the average annual fall, which in 20 years has been 25 inches, and in consequence all the wells failed last hot season, excepting one in the Native infantry lines, one in the Sappers' field practice ground, one in the Gorpooree lines, and those supplying the conduit from Kondwa, which continued to give a very small quantity. It is not an unusual thing to have so scanty a fall of rain, as it has happened five times in the last 20 years; on three of those occasions the quantity noted was even less than it was last year.

8. There are 20 wells in the Poona cantonment bazars, apart from those from which the troops are supplied, and they vary in depth from 35 to 64 feet. Two of these wells give water during all the year, but it is not drinkable; the other 18 fail in February or March; and this was the case in 1864, although the rainfall of the preceding year had been only two and a quarter inches less than the average.

9. The European troops have at all times had a very insufficient supply of water in their lavatories, and even if these had been furnished with baths, they could not have been filled. There is an expensively constructed plunge-bath in the Wanouree artillery lines, that has not been used for many years, owing to the want of water. There is a plunge-bath in the Gorpooree lines also, which in years with a fall of rain not under the average, has been used about seven months in the year; but it has been useless during the remaining five, including the hot season.

10. The Native cavalry located beyond Gorporee, and near the river, with a view to afford facility for watering the horses, have undergone much inconvenience, expense, and privation this year, owing to the expected supply from the river having failed. The river ceased to flow, and the men had to purchase the use of wells from the cultivators in the fields, at a greater or less distance from their lines.

11. The commissariat cattle have generally to be taken in the hot weather to the river, about three miles distant, when the tanks and wells dry up.

12. Fifteen years ago a masonry dam was built across the Moota Moola River, and an engine was erected to raise the ponded water to be delivered by pipe to the Sudur Bazar, to relieve the distress that was experienced every year by the inhabitants through the failure of the wells This supply had been continued yearly to the bazar population, and as the water was bad, it was not desired by the other inhabitants of the cantonment, while they had even the scanty supply that their wells afforded. This year, however, the river water had to be distributed more largely, and the Native troops were almost wholly dependent on it for all purposes.

13. The Jamsetjee Bund was unfortunately built below the city instead of above it, where the imponded water would have been comparatively pure; now the water is impure before it is ponded.

14. The river, which is the conjoined Moota, Moola, and Powna, has a large body of water in the rains, and at other seasons there are occasional freshets in it, when rain has fallen on the hills where its sources lie. When in full stream, it can contain but little impurity in solution, although it carries much earthy matter in suspension; but in the dry season, when the stream is small, the water becomes impure, as might be expected, from its passing many villages in its upper course, and then the cantonment of Kirkee and the city of Poona, where much of the filth of the town passes into it. The sewage, indeed, was intercepted during last dry season, but there are no practicable means of preventing the accumulated filth of the surface gutters from being washed into the river after a fall of rain. Besides intercepting the sewage, special policemen were employed along the banks of the river, both at and above their confluence, to prevent washing, or bathing, or throwing of filth into the water, and unceasing efforts were made to keep it from defilement.

15. The water, before it was raised at the Jamsetjee Bund, used to pass through a filter, but this has been inefficient for some years, and it would have been too small this year, even if in use, to have filtered the unusually large quantity that was distributed.

16. The water was analysed at intervals of a month during the time it was being used in the cantonment, and was found to have from two to three and a half grains of organic matter in solution; and under the microscope the unfiltered water was seen to contain many animalcules.

17. The quantity of the water from different wells differs, as might be expected, from these being sunk in trappean beds of different mineralogical character, some having in their own composition, or in that of their contained minerals, more or less of lime, or soda, or potass, and yielding on their decomposition more or less of soluble salts.

18. Of the 20 wells in the bazars, there are only nine that give drinking water, and these fail in February or March. The water of the other 11 is too strongly saline to allow of its being used for drinking or cooking.

19. The

19. The water of the rest of the cantonment, or that part which has its natural drainage to the Moota Moola, and which is occupied by the troops, is of better quality. It is very hard, but it is liked by those who use it, and by chemical analysis it is found to contain but a trifling amount of organic impurity. The results of analysis of samples of the waters taken from the well and the conduit supplying the European troops, that did not altogether dry up, and which were drawn at the close of the hot season, show that the Gorpooree well had a total amount of 30·24 grains of solids in a gallon, with hardness according to Clark's scale, of 19, but only 0·34 grain of organic matter in the gallon. The water of the Wanouree conduit had in solution 23·38 grains in a gallon of solid matter and 0·73 grain of organic matter.

20. Kirkee cantonment is close to the Moola River, and at the distance of a quarter of a mile from its confluence with the Moota. The rock on which it stands is of the same nature as that at Poona. The supply of water is even more unsatisfactory than that of the Poona cantonment. There are seven Government wells, varying in depth from 36 to 89 feet. They usually give drinking water for several months after the rains, but fail at the beginning of the hot season, when the river water has to be resorted to. This year, owing to the scanty rainfall in 1864, the river water had to be used throughout the twelve months. The plunge-bath at Kirkee is never used because of the want of water.

21. The Moola nearly ceases to flow in the hot season, and then the water lies in foul stagnant pools in its bed. This year, owing to the height of the Jamsetjee Bund being temporarily raised, the imponded water reached back to the Kirkee cantonment. Chemical analysis showed the amount of organic impurity in it to range from about one and a half to four grains in a gallon.

22. It is highly desirable that a more constant and a much more copious supply than there is now, of good water, should be afforded to the cantonments of Poona and Kirkee—not only to the troops, but also to the followers and to the inhabitants of the bazars. It is demanded not only for the greater reason of common humanity, that these also should be preserved from what is injurious to their health, but the welfare of the troops, with whom they live in so close neighbourhood, also requires that the followers should be kept free from all such communicable diseases as might be caused or fostered by the drinking of impure water, or by the want of cleanliness that its scanty supply occasions.

23. It is obvious from past experience, that no constant and adequate supply of water is to be obtained by multiplying wells. It is manifest also that pure water cannot be got from the river when it passes the populous city of Poona, and it is at great risk to health that the river water is now used. The Municipal Commissioners of Poona are so well aware of the evil that results from drinking the river water in the dry and hot seasons, when it has ceased to flow, that they are now engaged in procuring an increased supply from a purer source, so as to render the inhabitants of the town independent of the ponded water of the Moota.

24. It is most desirable that water should be obtained for the cantonment from the hills, where the rainfall is more copious and more to be depended on, than it is on the plain on which the cantonment stands. If the water collected on the hills, or from streams near their sources on the hills, be stored in sufficient bulk, it may be kept pure, and it will be free from the objectionable hardness that the well water has; and at the same time it may be supplied by gravitation in drinking fountains, in lavatories, and in baths to the barracks, in furtherance of the measures which it is the wish of Government should be carried out for the welfare of the British soldier.

25. From a return furnished by the Quarter-master General of the army, showing the number of soldiers, their families, and followers, and an approximate return prepared by the cantonment magistrate, showing the population of the bazars, it appears that, within the military limits of Poona, there is a population of 34,853 persons.

26. Calculating for what in England would be considered the moderate allowance of 30 gallons for each person, the daily consumption of the inhabitants would be 1,045,590 gallons. To supply a plunge-bath to the artillery and to the general depôt, two such baths to the two infantry regiments, and one plunge-bath for the officers of each of these regiments, the water being changed daily, about 1,57,000 gallons would be required. For the cattle for drinking alone, without an allowance being made for wastage, 14,752 gallons would be needed, according to information received from the Commissariat Department. Thus at a moderate calculation, with the present estimated population, the daily demand in the Poona cantonment would be 1,217,742 gallons; but as the population has hitherto been increasing, and is likely to increase more rapidly, when the Government offices are brought from Bombay, the prospective demand may be estimated at one and a half millions of gallons a day.

27. Kirkee has 3,675 inhabitants, who, at the same allowance, would require 110,250 gallons, while for a plunge-bath for the men, and one for the officers, 52,348 gallons would

have to be added. The horses and other animals would require 7,404 gallons: altogether the daily demand would be 1,60,000 gallons. The requirements of Kirkee are, however, at present far less than they will be when the factories which are in progress, or in contemplation, come into operation.

(signed) *A. H. Leith,*
Deputy Inspector General of Hospitals,
President Sanitary Commission.

Poona, 5 September 1865.

APPENDIX III.

ANALYSIS of KOKUM (Garcinia Purpurea).

REPORT by *Robert Haines,* Esq., M.B., Chemical Analyser to Government.

"EXAMINATION has shown that the chief cause of the acidity of the fruit is malic acid. There is also some tartaric acid, but the quantity appears to be very small. Air-dried *kokum* contains free acid and acid salts, which, reckoned as anhydrous acid, are equal to 15·12 per cent., and the ash contained alkalis and alkaline earths equivalent to 2·14 per cent. more, which existed in the fruit combined with a full proportion of base. The fruit therefore in this state contains a total of vegetable acid, chiefly malic, combined and uncombined, of 17·26 per cent. I am now engaged in preparing a quantity of acid from the small proportion of other soluble matters present, the *kokum* is a most convenient and abundant source of this acid.

"*Kokum*, as bought in the bazar, is fraudulently moistened with water to such an extent as to double its weight, so that allowance must be made for this circumstance in estimating the acidity of the fruit as used by the purchaser."

APPENDIX IV.

GENERAL ORDERS of Government and of the Commander in Chief relating to the Sanitary Condition or Comfort of the TROOPS.

Published during 1865.

Meat-safes and salt-cellars allowed for hospitals of British infantry. G. G. O. No. 142 of 13th January 1865.

Diets for European Hospitals revised. G. G. O. No. 132 of 6th March 1865, and No. 366 of 4th July 1865.

Barrack Department Conservancy Rules revised. G. O. C. No. 278 of 16th March 1865.

Subsistence Allowance and Full Rations for 12 months instead of six to Widows after their Husbands' demise. G. G. O. No. 224 of 12th April 1865.

Wooden Bins allowed for Barrack and Hospital Cook-houses. G. G. O. No. 228 of 15th April 1865.

Prizes granted to 1st and 2nd Class Regimental Workmen. G. G. O. No. 286 of 17th May 1865.

Water and Conservancy Establishment for the Head Quarters of Brigades of Royal Artillery revised. G. G. O. No. 290 of 19th May 1865.

Filters allowed for Guard-rooms. G. G. O. No. 294 of 23rd May 1865.

Scale of clothing and necessaries for transports from India to England revised. G. G. O. No. 327 of 14th June 1865.

Canteen rules revised. G. G. O. No. 350 of 28th June 1865.

Disposal of clothing and bedding used by cholera sick. G. G. O. No. 351 of 28th June 1865.

Marching of troops between Malwa and the Dukhun *viâ* Aseerghur prohibited between 1st of September and 1st of November. G. G. O. No. 411 of 27th July 1865.

Valises and boxes issued gratis to soldiers' families embarking for England. G. G. O. No. 473 of 13th September 1865.

Malt liquor from the canteen allowed to subaltern officers with European troops. G. G. O. No. 512 of 28th September 1865.

Appendix V.

Recreation Rooms for British Soldiers in India.

Sanctioned by Despatch, No. 67 of 1865, of Her Majesty's Secretary of State for India.

(Bombay Government Resolution, Military Department, No. 1443 of 1865.)

I. A double fives-court for each wing on an improved plan, one court in each wing to have a back wall to admit of its being used for racket playing.

II. A double skittle-alley in each wing, one of each to be of sufficient length to allow of the American bowl game being played.

III. A gymnasium, according to the English standard plan as far as practicable.

IV. A swimming bath for each wing for men, raised above the level of the ground to admit of complete natural drainage.

V. The same for each wing for the men's families.

VI. Accommodation for workshops, as agreed to by the Rawul Pindee Committee, dated 14th March 1864.

VII. A reading-room with presses for books, a recreation-room, and a regimental refreshment shop, all under the same roof, but the latter at one end, separated entirely from the rest of the building by a partition wall and having a separate entrance.

VIII. A station theatre.

IX. A cricket-ground, to be railed in and turfed by Government.

X. A serjeants' mess with reading and recreation-rooms in a central position, convenient to the staff serjeants' quarters, or in the case of batteries of artillery, or other small bodies of men, under the same roof as the staff serjeants' quarters.

XI. A musketry instruction-room.

XII. A women's day-room for each wing.

Appendix VI.

List of Works of Construction, Additions, and Alterations, completed or in Progress during 1865, in Barracks and Hospitals, in connection with the Accommodation, Health, or Comfort of the Troops.

KIRKEE.	
Constructing nine lower-storied barracks	Completed.
Improving the floors of seven artillery barracks	In progress.
Alterations to the plunge-bath	Completed.
Constructing matron's and assistant matron's quarters, with cook-rooms at artillery hospital	In progress.
Alterations and additions to the library in artillery lines	In progress.
Erecting filters for the artillery	Completed.
POONA.	
Constructing a range of family quarters for the European sappers and miners	Completed.
Constructing subsidiary buildings for the European sappers and miners	In progress.
Paving a barrack latrine in the sappers' lines	Completed.
Erecting thatched sheds against the rear walls of the regimental latrines at Poona and Kirkee	Completed.
Increasing the size of the washhouses of the flank barracks occupied by the General Depôt	Completed.
Constructing a raised footpath from the hospital to the female hospital of General Depôt	Completed.
Temporary urinaries for the General Depôt	Completed.
Temporary accommodation to prevent overcrowding	In progress.
Marking on the door the maximum number of men to be accommodated in each barrack at Poona and Kirkee	Completed.
Building huts for a Native infantry regiment and 12 quarters for Native officers	Completed.
Erecting a temporary latrine for Native infantry hospital	Completed.
Constructing a temporary latrine for a Native infantry regiment	Completed.
Converting a bath-room into a special ward in one of the Native infantry hospitals	Completed.
Stone pavement to the temporary Native hospital privy	In progress.

Ghorpooree.	
Paving the floors of the infantry barracks	In progress.
Altering the three ventilators of one of the barrack-rooms	Completed.
Erecting a permanent building as a store-room for the infantry hospital	Completed.
Alterations to the plunge bath	Completed.
Adapting a barrack latrine for a trial of dry earth	Completed.
Additions and alterations to the infantry hospital	In progress.
Chisel dressing the stone flooring of the several washing-rooms of the new Ghorpooree barracks	Completed.
Erecting a temporary hospital in the lines of the Native cavalry	Completed.
Wanowree.	
Weather screens to the easterly and westerly verandahs of the artillery hospital	In progress.
Constructing a separate water shed for the artillery hospital	In progress.
Married men's quarters for nine families, artillery lines	In progress.
Constructing two upper-storied European infantry barracks	In progress.
Regimental cook-room	Completed.
Regimental privy	Completed.
Married men's quarters with out-houses for the infantry	In progress.
Subsidiary buildings to the married men's quarters	In progress.
Providing roof ventilation to the existing married men's quarters	Completed.
Inserting half-glazed doors in the enclosed verandah of the infantry hospital	In progress.
POORUNDHUR.	
Constructing two new barracks	Completed.
Retaining wall to barrack No. 3	In progress.
Masonry drain in rear of canteen	Completed.
Constructing privies for barracks Nos. 3 and 4	Completed.
Constructing cook-rooms for ditto - ditto	Completed.
Removing ceiling cloths from 16 family quarters	Completed.
Fixing iron cowl ventilators to school-rooms and to old family quarters	Completed.
Fixing iron cowl ventilators to barrack No. 2	Completed.
Rebuilding barrack No. 1, destroyed by fire	In progress.
Constructing masonry drain in rear of police guard	Completed.
Constructing quarters for apothecary	In progress.
Constructing quarters for hospital apprentice	In progress.
SATARA.	
Constructing a dead-house for the European infantry hospital	Completed.
Constructing family quarters for 24 families	Completed.
Inscribing numbers on the doors of the European infantry barracks	Completed.
Four lavatories and rooms for private ablution	In progress.
Plunge-bath	In progress.
ASEERGHUR.	
Married men's quarters for 12 families	In progress.
Fives-court	In progress.
Roof ventilation for European guard-room in the gaol	Completed.
Recreation room (temporary)	Completed.
Additional pendal for native troops	Completed.
Cleaning out tank	In progress.
AHMEDNUGUR.	
(*N.B.*—The list was not furnished from this station.)	
MHOW.	
Artillery Lines.	
Converting part of two stables into workshops	Completed.
Constructing cut-stone floors and tiled verandah to the quarter-guard	Completed.
Constructing cut-stone floors in the barracks	Completed.
Constructing married men's quarters	In progress.
Ovens for the cook-house. Converting available buildings into a temporary canteen and a serjeants' mess-room	Completed.
Erecting a temporary building in the cattle lines for a guard and store-room	Completed.
Placing two iron-barred windows in the guard-room	In progress.
Putting two windows in the west end walls of each temporary barrack	Completed.
Removing partition wall of the west end of the hospital, and putting two windows into the western outer walls of both wards	Completed.
Making stone floors and masonry platforms in the wash-sheds	In progress.
Converting a portion of stable into a temporary coffee-shop and refreshment-room	In progress.

MHOW—*continued.*

Cavalry Lines.

Constructing two urinaries at the barracks	Completed.
Putting a plank partition for the serjeants in the barracks	Completed.
Constructing temporary latrines for the family quarters	Completed.
Converting a part of stable into workshops	Completed.
Constructing stone steps for the barracks and outbuildings	Completed.
Constructing staircases in the rear verandahs of barracks	In progress.
Constructing small cisterns in the bath-rooms of the hospital	In progress.
Constructing out-offices for the serjeants' quarters	In progress.
Removing masonry partitions at each end of the tiled male hospital	In progress.
Making new floors in the wash-house of the hospital	In progress.

European Infantry Lines.

Hospital	In progress.
Constructing a temporary guard-room for the hospital	Completed.
Hand-rails and alterations to the staircases of three barracks	Completed.
Constructing staircases in the verandah	In progress.
Constructing out-offices for the serjeants' quarters	In progress.
Enlarging ventilating openings in the walls of hospital, and fixing temporary doors in the same	In progress.

Cantonment.

Improving the European cavalry, artillery, and infantry cells by roof ventilators, iron-barred doors in addition to the wooden ones for ventilation. Some cells enlarged	In progress.
Altering the doors of five garrison cells	Completed.
Converting two windows into half-glazed doors in the quarters occupied by a staff serjeant	Completed.
Converting an old barrack into quarters for the warrant and non-commissioned staff	In progress.
Windows in the room occupied by fort guard opened out, and ventilating tubes fitted in the roof	Completed.
Erecting a latrine for the Native infantry hospital	In progress.

NEEMUCH.

Artillery Lines.

Constructing a privy and covered passage to the hospital	In progress.
Supplying doors and windows to the quarters occupied by the serjeant major and quartermaster serjeant	Completed.
Placing windows, &c., in the harness-room	Completed.

European Infantry Lines.

Constructing cesspool for the drains in rear of the family quarters	Completed.
Enclosing as a room the end verandah of barrack used as canteen	Completed.
Constructing a cook-house at the solitary cells	Completed.
Constructing quarters for 2nd class hospital servants for the Native general hospital	In progress.

NUSEERABAD.

Artillery Lines.

Constructing two privies and a cart-house for the barracks	Completed.
Constructing a guard-room for the hospital	Completed.
Erecting two urinaries in the lines	Completed.
Making a surgery in one of the verandah corners, &c., in the hospital	Completed.

European Infantry Lines.

Constructing 16 quarter-company barracks	Completed.
Constructing out-houses to staff serjeants' quarters	Completed.
Erecting a temporary latrine for the school-room	Completed.
Erecting a semi-temporary shed for the protection of the ambulance sick cart	Completed.
Constructing bath-rooms in four staff serjeants' quarters	Completed.
Hanging punkahs in the old barracks	Completed.
Furnishing fixed venetians to the ventilating caps of 12 new quarter-company barracks	Completed.
Making certain alterations to a building, No. 26, to adapt it as a coach-house for hospital carts	Completed.
Supplying large iron-barred windows in six of the garrison cells	Completed.
Converting 12 garrison cells into eight large ones, and putting a tiled roof over the terraced one	In progress.
Supplying hooks and punkahs in the staff serjeants' quarters	Completed.
Enlarging ventilators in the roofs of quarter-guard, hospital, and school-room	Completed.

ABOO.	
Barracks	In progress.
Supplying iron reservoirs for waste water for the bath-rooms of the new barracks	Completed.
Erecting temporary huts to accommodate the hospital servants	Completed.
DEESA.	
Artillery Lines.	
Stables	Completed.
Harness-rooms and workshop	In progress.
Two latrines	Completed.
Building partition walls to separate the apothecary's quarters from the female ward	Completed.
Ventilating the guard-room	Completed.
Making small reservoirs and drains to catch the water from the tatties in the verandahs in the married men's quarters	Completed.
Adding a verandah to the solitary cells	Completed.
Adding a room for a library to the serjeants' mess	Completed.
Converting the windows with outer wall of the hospital into doors	In progress.
Paving with stone the floors of the barracks	In progress.
European Infantry Lines.	
Quarters for the provost serjeant	In progress.
Temporary urinaries	Completed.
Erecting permanent quarters for 20 married families	In progress.
Erecting a temporary barrack	In progress.
Dividing the new lavatory attached to the hospital	Completed.
Ventilating the hospital guard-room	Completed.
Providing ground ventilation for the barracks	Completed.
Constructing an ablution-room for the solitary cells	Completed.
Increasing the accommodation in the canteen	Completed.
Adding verandahs in the front of the cook-houses	Completed.
Additions and alterations to the lavatories attached to the barracks	Completed.
Alterations and improvements in the family quarters infantry and Royal Artillery	In progress.
Converting the gymnasium of the European regiment into quarters for families	In progress.
Building partition walls to the pendals attached to the hospitals occupied by the European and Native troops	Completed.
Thoroughly ventilating the Native infantry hospital	Completed.
AHMEDABAD.	
Artillery.	
Constructing a privy and urinary for the quarter-guard	In progress.
Four bath-rooms added to old temporary wash-house	Completed.
Adding verandah on the north and east sides of the quarter-guard, and putting in two windows in the prisoners' cells	Completed.
Erecting a temporary latrine near the building recently converted into quarters for the brigade serjeant major	Completed.
Three temporary stables for the accommodation of 57 horses	In progress.
Adding a back verandah to each of the family quarters lately built	In progress.
Paving three European barracks with stone	In progress.
Dividing a ward in the Store Lascar hospital into two	Completed.
Cantonment.	
Converting the old Golundaz gun-shed into a staff hospital for Natives	Completed.
Adding a verandah to the Sudur Bazar guard-house	Completed.
Conversion of a shed into rooms for hospital servants	Completed.
Certain addition to the latrine belonging to the guard-room in the arsenal	Completed.
BARODA.	
Constructing new permanent privy	Completed.
Quarter-guard of artillery, roof raised and ventilators added, detention roof 18′ × 9′ added, as also verandah 8′ wide along front of the building. Pegs provided for hanging coats on and shelves for bedding, &c.	Completed.
KURACHEE.	
Artillery.	
A partition wall in the middle of lower barrack No. 2	Completed.
A new window; perforated iron plates put into four windows in the guard-room and the old gun-shed	Completed.
Two barred doors for ventilation in the quarter-guard	Completed.
Quarters for an assistant apothecary with two apprentices attached to the hospitals	Nearly completed.
Quarters for four staff serjeants	Nearly completed.
Skittle-alley	In progress.

KURACHEE—*continued.*	
Infantry, &c.	
teps to the plunge-bath situated near the soldiers' bazar	Completed.
teps to the plunge-bath in the Somerset lines	Completed.
By an archway both rooms of the school-house made into one, Somerset lines	Completed.
Steps to the Napier barracks plunge-bath	Completed.
Removal of the iron building in rear of the Napier lines	In progress.
Alterations and additions to the latrines, &c., in the FitzClarence lines	Completed.
GHIZREE.	
Weather frames to the coffee-shop at the sanitarium	Completed.
HYDRABAD.	
New bath-room and privy to the garrison cells	Completed.
Steps to the plunge-bath of the European infantry regiment	Completed.
Adding a door and window to the ordnance staff serjeants' quarters in the fort	Completed.
A guard-room in the fort	Nearly completed.
JACOBADAD.	
Constructing lines at the frontier outposts	In progress.
Irregular Cavalry.	
Constructing lines at the outpost at Kushmore	In progress.
Constructing lines at the outpost at Soree	In progress.
Constructing lines at the outpost at Joj	Nearly completed.
Constructing lines at the outpost at Sunree	In progress.
Constructing lines at the outpost at Goranaree	In progress.
BOMBAY.	
Colaba.	
Providing Vehar water to the infantry and sanitarium barracks and officers' bungalows	In progress.
Inserting a door in the bath-room of the sanitarium hospital	Completed.
Improving family quarters' drains	Completed.
Improving the privy seats of infantry hospital	Completed.
Erecting six temporary bath-rooms	In progress.
Erecting a partition wall in one of the barrack-rooms to provide accommodation for a serjeants' mess	Completed.
BELGAUM.	
Artillery.	
Stables with subsidiary buildings	Completed.
Altering the plunge-baths in the fort	Completed.
Constructing masonry platforms for the lavatories of the old and new barracks in the fort	Completed.
Additional subsidiary buildings	In progress.
European Infantry.	
Altering the plunge-baths	Completed.
Constructing a covered passage to the bath-rooms	Completed.
Constructing two lavatories in the verandahs of the hospital	Completed.
Constructing a lavatory and bath-room for the upper-storied ward of the hospital	Completed.
Constructing two temporary tiled sheds for dry earth in rear of the barrack latrines	Completed.
Constructing two staff serjeants' quarters	Inprogress.
Adding bath-rooms to all wash-houses of barracks	In progress.
Constructing screen walls to the privies of the married men's quarters	In progress.
ADEN.	
European Infantry and Artillery.	
Four upper-storied barracks, Front Bay	In progress.
Subsidiary buildings to the Isthmus barracks	Completed.
Paving lower rooms, Isthmus barracks	Completed.
Family quarters and out-houses, Isthmus	In progress.
Erecting four bath-rooms to the barracks	Completed.
Upper-storied barracks, Steamer Point	In progress.
Additional upper-storied barrack with subsidiary buildings, Steamer Point	In progress.
Ventilating the family quarters European infantry	Completed.
Native Infantry Lines.	
Privies and urinaries	Completed.
Additions at Perim	Completed.

INSPECTION REPORTS.

RECOMMENDATIONS for the Improvement of the ARTILLERY LINES and CANTONMENT, SHOLAPOOR.

(Inspected 4th January 1865.)

THE artillery lines are at the south-west end of the cantonment, from the rest of which they are separated by a watercourse or small ravine, that has been embanked to form a reservoir of water. The high road to Beejapoor passes between the artillery barracks and the hospital.

The barracks and subsidiary buildings occupy nearly the highest part of a gentle eminence, and are about 625 yards from the reservoir, and at an elevation of about 48 feet above its surface. The buildings stand on a porous soil or gravel (or moroom), formed from the decaying subjacent trap rock, but the parade ground, which is on the south and south-west of the barracks, is on black soil retentive of moisture, adhesive after rain, and fissured in the dry season.

There is no appearance of anything having been done artificially for the drainage of the lines. The natural fall of the surface is favourable, and the water falling on all to the westward of Beejapoor road flows to the north and west. The fall of the ground east of the road and on which are the hospital and grass cutters' lines, is towards the reservoir above mentioned, and which is the chief source from which the inhabitants of the cantonment are supplied with water.

The ground in the neighbourhood of the ravine, below the embankment, is swampy from leakage. Trenches have been cut to drain it, but these are at present choked, and are full of stagnant water. Eastward of this swamp there is the Moteebagh, where the soldiers have their gardens. There is an over-abundant supply of water for irrigation, and this is taken advantage of to grow lucerne, which is more remunerative than most other articles. It would be conducive to health were the superabundance of water drained off.

It is proposed to build new barracks for the artillery, and a site has been chosen for the buildings about 250 yards south-west of the present site, and with about 10 feet greater elevation, it being the highest ground in the artillery limits. This part is barely clear of the black soil.

The three barracks are placed in line, at intervals equalling the length of a building, and with aspect south by west and north by east; they are ground-floor lime-masonry buildings, with earthen floors and thatched roofs, and have a six feet wide-tiled open verandah on the south and west only. The height of plinth varies with the slope of the ground, but its minimum is about two feet. The floor of the verandah is a foot lower.

Each building has a room for single men 96½ feet long and 24 feet wide, or which has an area of 2,316 square feet, and is 10 feet high under the beam, or 11½ feet if the height of the wall plate be taken, and then it contains 26,634 cubic feet of air. At one end there are two serjeants' rooms, each 11¼ feet square, with two windows, and with its only door opening into the men's room. At the other end of the barrack-room there are two windows, and on each side there are two doors 7 ft. × 4 ft. clear of the frame, and seven windows 5 × 3 ft. and closed with wooden shutters only. There are three ridge ventilators 2 feet square, with louvre boards, but nearly blocked up with pitch.

The 2,316 feet of area would afford 90 square feet of floor to 25 men, or 80 feet to 28 men; but as there are on each side but eight intervals between doors and windows, and one corner besides in which a cot can be placed, and as the intervals are but 6½ feet wide from splay to splay, even the smaller number of men cannot be placed in one of these rooms so as to be clear of window and doorway draughts, and at the same time to be 3 feet apart, as recommended by the Royal Commission.

These barracks were built for a troop of horse artillery, but have lately been occupied by the men of a field battery, which, with an establishment of 134 trumpeters, rank and file, would, after deducting 12 per cent. for married, leave 118 single men to be accommodated; these, on an aggregate area of (2,316 × 3 =) 6,948 square feet, would each have but 58 square feet, or 32 less that the mean, and 22 feet less than the minimum recommended by the Royal Commission. The aggregate cubic contents of the three barrack-rooms, if measured to the wall-plate, are 79,902 feet, or only 677 feet to each man. Each pier between the windows is provided with two saddle or harness racks; there is no separate harness-room. At the inspection the barracks were unoccupied, as a relief of batteries was going on.

The ablution accommodation is 14¼ feet of the east end of the south verandah, paved, and provided with a masonry bench, and partially enclosed with a 5 feet high wall; the room is 4¾ feet wide. There is a plunge-bath at the Moteebagh, near the soldiers' gardens, and about five furlongs from the barracks. This bath is dangerously deep for those who cannot swim, being 7¼ feet at the deeper and 5¼ feet at the other end, but it is now being made shallower. It is not provided with an urinary.

The

The barrack urinaries, which were formerly in verandahs, have been removed, and temporary sheds with partial bamboo walls, detached from the barracks, are used.

There are two latrines, one at the west flank, the other in rear, or the eastern barrack. They have each two rows of seats built back to back, with an intervening passage for the sweeper. Under and behind the seats there is a pavement sloped to a central cesspit for the reception of the fluid excreta: metal pans have not yet been introduced. The seats are not partitioned.

The cook-room is a paved and tiled building, with the usual masonry fire range, and an oven so large as but rarely to be used, on account of the large quantity of fuel it requires.

The coffee-room is in the same building with the canteen. The library and school-room were under one roof and in one room; this being found inconvenient, the serjeants' mess-room was used lately as a school-room. There are a fives-court and a covered skittle-alley and a cricket-ground.

The quarter-guard is a thatched building, having its uneven earthen floor on a level with the outer ground; it has a false verandah on the south and west. It is in length about 30 feet, and in breadth 15 feet; there is a door on the south, a window 4 × 3 feet with only a plank shutter on the north, and a similar window on the west.

At the east end of this guard-room, and under the same roof, is the detention-room. This is about 18 × 15 feet; its door is barred and opens into the guard-room, and in each of its other three sides it has, high in the wall, a large barred window always open, but protected from rain by a weather board. There is a portion of the roof raised for the ventilation of the building.

There are three prison cells in one block in the hospital compound; they are sufficiently roomy, but their floors are scarcely higher than the surrounding ground, and one part of the wall bulges and is unsafe.

The staff serjeants' quarters are old, ill-ventilated houses in rear of the barracks.

The family quarters consist partly of old thatched hovels, and in part of a block of five quarters built about a year ago. These last face the east, and have behind them, on the west, or windward, their privies and cook-rooms. The block is on a plinth, varying with the slope of the ground, and with its least elevation only six inches. The walls are of brick and lime, the floor is earthen, and the roof has a double layer of tiles. On the east or front and the two ends, there is a verandah 7½ feet wide, enclosed with a dwarf wall 2½ feet high, and roofed with a single layer of tiles. Each family has two rooms placed back to back, the front one 16 × 12 ft. × 13 ft. high, with a door opening on the verandah, the latter 6 ft. 9 in. × 3 ft. 4 in., and a glazed window 3½ ft. × 2½ ft. clear of the frame; the back or western room 16 × 10 ft. with the wall on one side 12 ft., and on the other only 6 ft. high; in the six-feet wall there is a door 5¾ ft. × 2 ft. 4 in. and a glazed window 2½ ft. square. The door of communication between the two rooms is 5 ft. 9 in. × 2 ft. 4 in. When these rooms were first occupied they were found intolerably hot, there being no ventilation when the doors and windows were shut, and the roof over the back room being very low. Two ventilating openings were subsequently made in the front wall over the doorway and window; each 2 ft. × 1½ ft., and two others, high in the partition wall, of 1½ ft. square. Still the ventilation is imperfect, there being no opening on the western side to allow of perflation.

There are two cook-rooms for the families, and an ablution room, and a privy opposite each end of the block, one appropriated to the males, the other to the females. The privies have under the seats finely cut stone pavement sloping to a large cesspit. The two end quarters have a door opening into the end verandahs, and an adjoining paved water or ablution room.

The hospital is on the east flank of the barracks, with a westerly aspect; it has a front yard bounded by a wall and railing, a small guard-room, now used for sick Native followers, and the quarters of the assistant apothecary, which have their cook-house injudiciously placed very near, and to the windward of the hospital, being close to its north-west angle.

The hospital plinth varies in height with the fall of the surface, and on the west is only nine inches. The walls are of lime masonry, the floor is paved with stone, and the roof is tiled. There is a verandah from 9 or 12 feet wide, paved, and on the front and ends inclosed with a dwarf wall and hinged weather-boards. There are two adjoining wards separated by a wall reaching to the tie-beam, and in which there is a door of communication; each ward is 30½ × 23½ feet with 14¾ feet under the beam, or 16½ feet height to the wall-plate, and has on the front or west a door 8 × 4 feet between two windows 6¼ × 3 feet, at the end two such windows, and on the east a large, or as it were a double window 6 ft. 8 in. × 6 ft. 2 in., and a door opening into a room formed by inclosing the middle portion of the back verandah. The verandah-room was formerly the dispensary, but has lately been used as a dining and day-room for the sick; all the casements are glazed. The disposition of the windows is unfavourable to the satisfactory arrangement of the cots. Over each ward there is a ridge ventilator two feet square, closed in and pitched, and in the centre a cowl ventilator of one foot sectional diameter, still open.

Besides the day-room, other two portions of the east verandah are inclosed at its corners to form an apprentices' room and a bath-room. This latter has a large masonry bath, which can be of no use, from the impracticability of supplying a sufficiency of water to fill it. There is a backyard enclosed on the sides by covered passages prolonged from the end

verandahs and walled outwardly, but provided with barred openings for ventilation. The passage on the north leads to what formerly was an urinary, and to the latrine which has plank seats without partitions, and under them a pavement from which liquid excreta were intended to flow to a cesspit. The south passage leads to a small room formerly used for patients with contagious disease, but now as the dispensary. The east side of the court is occupied with the cook-room, which is paved, and store-rooms. A gate at this side leads to the dead-house, which is outside.

A new tiled building on a higher plinth stands south of the hospital; it was intended for female sick, but having no subsidiary offices, it cannot be used by them. It has one well-lighted ward 29½ × 21½ ft. and 16¾ ft. high. It also has a cowl ventilator in the roof. This room has been given for occupation to the hospital serjeant.

The horse lines are about 70 yards south of the barracks, and the native horsekeepers' huts are on the west of those lines.

The officers' houses are north of the barracks on a lower part of the ground, that is here also rocky and gravelly: they are very old, thatched, poor habitations.

The barracks and hospital are supplied with water drawn from a well below the reservoir, and carried in skins and distributed by hand. The water has been examined chemically and found to be of good quality. The officer commanding the station suggested that the reservoir should be cleared of its accumulated silt.

Recommendations.

If the present intention to erect new barracks be speedily carried into effect, it will not be expedient to incur much expense in improving the present ones. Were these, however, to continue to be the habitations of the soldiers, they ought to be improved by having—

1. The walls raised to 18 feet.
2. The roof tiled and provided with ridge ventilation.
3. An inclosed verandah on north side for a day-room.
4. Clerestory ventilators between the eaves and verandah roof.
5. Glazed casements.
6. Paved floors.
7. Separate harness-room.
8. Detached ablution room fitted with basins, with supply, waste, and discharge pipes, and screened shower-baths, with pipe-drain to carry off the waste water beyond the camp limits nothwestward.
9. Water raised by a force-pump and syphon from the wells below the reservoir, and to be distributed by pipe to the barracks.
10. The latrines provided with metal vessels fitting close up to the seats, and the seats partitioned.
11. The floor of the quarter-guard room raised and paved, its ventilation improved, as has been done in its adjoining detention room.
12. New prison cells away from the hospital.
13. Improved ventilation in the staff serjeants' quarters.

There are improvements that are called for which are unconnected with the question of new barracks; they are the following:—

14. The newly built family quarters should be further improved by having ventilating openings under the eaves of the roof on the west side, or by dormer windows in the roof of the back room.
15. The remaining old huts should be replaced with new quarters on a revised plan, and with a westerly aspect, and with their offices to their leeward.
16. The privies should be improved in the way recommended for the barrack latrines, and the cesspits should be removed.
17. The ventilation of the hospital should be improved by clerestory ventilators with revolving shutters.
18. The assistant apothecary's cook-room should be removed from the hospital inclosure.
19. The latrine should have partitioned seats and glazed vessels fitting close up to them, and the cesspits should be removed.
20. The masonry bath should be removed from the ablution room, and this should be fitted with fixed washing basins supplied by tap with water.

21. Where the urinary was formerly, a bath-room should be made, and it should be provided with a screened shower bath and a screened tub bath.

22. The cook-room should be provided with a fixed boiler, with tap for the constant supply of hot water.

23. A small isolation ward should be provided.

24. The female hospital should be completed with an ablution room and a privy.

25. In order to keep clean the gathering ground of the water to be stored in the reservoir that supplies the cantonment, the grasscutters' and the cow and buffalo keepers' huts should at once be removed from their present position on the east flank to the north-west of the family quarters, or elsewhere.

The ground on which the habitations of men and animals are placed cannot under any circumstances be kept pure, and that on and near which these people live must of necessity be very foul, as they have no privies, and have habitually to resort to the fields to answer the calls of nature. Here those fields are the surface over which the rain-fall flows to the reservoir.

26. The accumulated silt in the reservoir should be removed this year when it is empty of water.

27. The trenches in the swamp below the reservoir should always be kept clear and with proper slope to carry off the water. The immediate clearing of the choked drains was ordered by the officer commanding the station on his attention being directed to their present condition.

28. An urinary should be provided for the plunge bath.

29. In designing the new barracks the supply of water to them by pipe should be included in the plan. Also the pipe drainage for the ablution rooms.

30. Should it be found that the revised plan of new barracks will require more ground than was calculated for in choosing the new site, the extension of this should be towards the present barracks, and not southward or south-westward, where the black soil is found.

After having made a general inspection of the cantonment of Sholapoor, it is thought necessary to bring to notice a few things in which improvement is particularly called for.

The Native infantry lines are most objectionably continuous with the Suddur Bazaar.

31. To remedy this, it appears advisable to remove the Regimental Bazaar, which fills up what would otherwise be an interval between the men's huts and the Suddur Bazaar, and as the buildings of the Suddur Bazaar in the vicinity of the road become ruinous, to prevent building and resume the land. The Regimental Bazaar might be located on the east flank of the men's lines.

The strength of the Native cavalry at the station has been reduced from a regiment to a squadron, and the abandoned huts have had all the roof and other wood carried off from them, and now the ruinous mud walls are not only unseemly, but are a cover for unwholesome filth. There are no latrines for the cavalry, and the very small space of a native soldier's hut affords but scanty convenience for those families who, rather than offend public decency by resorting for the purposes of nature to the neighbouring ground or ruined huts, confine themselves to their own abodes.

32. It is recommended that the ruined huts be cleared away, and,—

33. That latrines be provided for the Native cavalry soldiers and their families.

The state of the Fort ditch will be noticed in connection with the town of Sholapoor, which will be separately reported on.

(signed) *A. H. Leith*,
Deputy Inspector General of Hospitals,
President, Sanitary Commission.

Poona, 16 January 1865.

REPORT on the CANTONMENT of AHMEDNUGGUR.

(Inspected between 19th and 22nd September 1865.)

PRESENT:

A. H. Leith, M.D., President.
Colonel H. W. B. Bell, R.E., Member.
T. B. Beatty, M.D., Member and Secretary.

THE cantonment of Ahmednuggur is 126 miles distant, in direct line, from the open sea, and at an elevation of about 1,900 feet above it. It is 70 miles from Poona, and 33 miles from Seroor, in a N.E. by E. direction; and Maligaum is N. ½ W. from it at a distance of 100 miles.

The mean annual temperature, according to the imperfect observations recorded, is 77° Fahr. The range of temperature is less trustworthy, as no special care seems to have been taken to place the thermometers favourably for obtaining the minima and maxima in the open air. The mean rainfall for 11 years, according to observations made in the neighbouring city, has been 25½ inches.

The cantonment occupies four square miles of ground lying close to the east and south sides of the town of Ahmednuggur, from which it is separated by the city wall. The ground falls from the city to a large watercourse, called the Bhingar Nulla, that runs south-westward towards the Seena river, and nearly equally bisects the cantonment. The surface again rises a little towards the site of the European barracks south of the nulla.

The surface soil is mostly the regur or stiff and retentive black earth. The subjacent trap rock, however, or its disintegrating gravel, appears at the surface at the north-east end of the cantonment, and the low ridge on which the European barracks towards the south end are built, is somewhat gravelly. Near the eastern limit there is a gravelly surface in the neighbourhood of pits that are dug to obtain kunkur, or concretionary carbonate of lime.

The natural drainage is generally good, there being a fall from the highest and most western part towards a watercourse west of the city, and from the rest of the north-western half of the cantonment the fall is towards the Bhingar Nulla. The south-eastern part, on which are the lines of the European troops and the Sudur Bazar, is drained partly into the Bhingar Nulla, and partly into a watercourse that runs nearly parallel with it, and farther south. The brigade parade ground is somewhat uneven in surface, and the soil being very retentive, small pools of water were seen remaining on it several days after rain had fallen. Westward of the Sudur Bazar the ground is uneven from excavations made in former times.

Excepting the parade and practice grounds, and the parts occupied by the men's and the horses' lines, and the bazars, the ground is thinly wooded, the most common tree being the Babool or Acacia Arabica.

The brigade consists of a troop of horse artillery, a regiment of European cavalry, and a regiment of Native infantry. The fort, which stands south of the town, and between it and the Bhingar Nulla, is occupied with stores only.

CAVALRY LINES.

Barracks.—They are 12 in number, arranged in two parallel rows, the barracks of the front row covering those of the back row. The distances between the rows and between the neighbouring barracks are about 60 feet.

The aspect is north-west by west. The buildings are of brick and lime mortar, and they are tiled. The plinths vary according to the slope of the ground, from 1½ to 3½ feet in height. The earthen floors are now being replaced with stone pavement.

Each barrack room is 95′ × 24′, and is 21′ high to the top of the wall, giving surface accommodation at the regulation allowance of 90 square feet to 25 men, each of whom has 1,915 feet of space. There is an open verandah 12 feet wide in rear, and in front there is a verandah of the same width, partly glazed, partly venetianed, and which is used as a saddlery room. The room has four ridge ventilators of 18 inches diameter, and on each side two doors and nine windows; and there are above these 11 clerestory windows, each 4′ × 3′, with revolving shutters, both glazed and venetianed, and which can be closed separately as required, to exclude rain or dust.

Owing to the faulty arrangement of the doors and windows, although there is a superficies of floor sufficient for 25 men, only 22 of those who occupy the rooms can place their cots so as not to be opposite a window or doorway. There is no day-room.

At the right end of each barrack there are two serjeants' rooms enclosed from the verandah, and of dimensions 24′ × 12′, and with their outer or lower wall 13 feet high.

They

They have each two doors and two windows, and they are without any arrangement for ventilation independent of these. Between the serjeants' rooms and the men's room there are two dark unventilated apartments that are used to hold stores, and which could not easily be rendered fit for habitation.

At the left end of the barrack, the verandah is enclosed as an ablution room, and it has a masonry bench for basins, but so high that it is never used, the men preferring to place their basins on the half-cask bathing tubs, turned upside down for the purpose. Besides these tubs and basins, the furniture consisted of scuttle butts for water, and wooden floor gratings. The waste water flows to a masonry cesspool. There is no screened bath-room, nor place for private ablution.

Staff Serjeants' Quarters.—There are two detached buildings for serjeants of Class A. The quarters have no ventilation, excepting by the doors and windows, which do not appear to be kept sufficiently open. The farrier major and the band master occupy quarters near the hospital, and which belonged formerly to the Golundaz Battalion.

Serjeants' Mess-room.—In rear of the left end barracks there is a building nearly equal to them in dimensions, the north-east half of which is used as a serjeants' mess-room. It is sufficiently large, and it is as lofty as the men's barrack rooms, and is equally well ventilated.

The other end of the building accommodates the men's library. It was well furnished with periodicals, and the men could play at several in-door games. The number of subscribers was 260. The room has but an earthen uneven floor, and it is too small. Between it and the serjeants' mess there is a room of considerable size, which was being temporarily occupied by a serjeant, and which might be added to the library.

There is no coffee nor refreshment room connected with the library. A building in a line with it, at a few yards distance, which was formerly a punishment shed, and which is now used temporarily as a canteen by the troop of artillery, would, when available, be well fitted for a refreshment room.

Canteen.—The floor is earthen and uneven. The accommodation is said to be insufficient, but were there a covered recreation room, it would, it is thought, be sufficiently large.

Cook Houses.—There are four of these, and they are placed two and two. They are dark and smoky. The fire ranges are too high and the fire places in bad repair. There are ovens that are too large to be used on ordinary occasions. The sinks are on the level of the floor, and the waste water and liquid refuse flowed to large masonry cesspools behind the building. These reservoirs were said to be emptied daily, but it is impossible to keep such receptacles clean.

School Rooms.—The schools are badly accommodated in the range of building which formerly was a gun-shed, and in which the regimental workshops also are at present. The earthen floor is on the level of the outer ground and the walls are low. Estimates, it was said, were being prepared for a new building. There were about 80 adults and 30 children attending the schools.

Gymnasium.—This is in a large building erected by the Bombay Artillery and now the property of the 3rd Dragoon Guards. It is furnished with all the usual appliances of a gymnasium, and is much resorted to by the men. There were 260 subscribers to it.

Theatre.—This is also the property of the regiment. It is under the same roof as the gymnasium.

Fives Court.—There is a double one, but one side is enclosed as a racket court for the officers, and its door was locked at the time of the visit of the commission.

Skittle Alley.—There is one covered alley. It is said to be insufficient.
Some soldiers were seen playing at quoits.

Cricket is said to be a favourite amusement of the men.

Workshops.—The regimental workshops occupy a considerable number of men. They are accommodated in the range of buildings which was formerly the artillery gunshed, when a battalion was stationed at Ahmednuggur. The ventilation was deficient, but sanction for its improvement had already been received. There were but two blacksmiths and three carpenters employed in private workshops, and they had accommodation near the hospital in buildings that formerly belonged to the Golundaz Battalion.

Gardens.—There was a considerable extent of garden under cultivation and in good order near the plunge bath. About 21 men worked in these gardens. At the family quarters also there were small gardens, and they were objectionably near to the buildings, the prohibitory rule not being yet in force.

Plunge Bath.—There is one about 50 feet long and seven feet deep at one end. At the other end is a flight of steps, and the bottom, which originally shelved gradually from them towards the deeper end, has recently been relaid at a uniform depth of four feet in the prescribed fourth part of the length, and then there is a sudden fall. The inclined plane was preferable. The bath is supplied from a neighbouring well at which bullocks are worked daily. The overflow of the bath was being used in irrigating the gardens.

The bath is said to be emptied once a fortnight, and to take more than two days to fill again. There are bathing parades, and one troop is marched to the bath each day. Every man thus is obliged to bathe once in eight days, and he may bathe as much oftener as he pleases. There are no fixed seats, and there is an insufficient number of pegs for clothes. There is no urinary at the bath.

Barrack Urinaries.—There is a small building of permanent construction detached at a distance of seven feet from the barrack, and in a line with the front verandah, and which is now the urinary. Although a tub has been substituted for the masonry trough formerly used, this room is, from its position and its want of ventilation, a constant nuisance to those in the barracks.

Barrack Latrines.—There are two latrines in rear of the other subsidiary buildings. Each consists of two rooms, back to back, with a central passage for the sweeper and with a masonry cesspit for fluid excreta, and which was said to be cleaned daily. One was without soil vessels. The other had been recently altered and had soil pans, but they did not fit close up to the plank seat; and the floor, which was of mud instead of being paved, was wet with urine. The compartments were not screened.

Family Quarters.—They consist of four blocks of 20 quarters each, placed in two rows to the right of the single men's barracks, with the same aspect, but in a line farther back. All are faulty in being built with floors on the level of the surrounding ground. Two blocks are built on the standard plan of 1858, like those of the Infantry Gorpooree barracks at Poona, and are very good. The other two are similar in plan to the married men's quarters at Kirkee and at the depôt at Poona, without the roof ventilators, and having all the defects that have been mentioned in the report on those at Poona.

The out-offices of the first two blocks are sufficient in number. The other two blocks have for every 10 quarters two cook houses and two privies and ablution rooms. The privies were foul, and they had cesspits, which were still in use, and their floors are unpaved.

Quarter Guard.—The main room is 24′ 8″ × 18′ 9″ and 15′ 3″ high, with two doors and two windows with wooden shutters and unglazed. At each end of the room there are two lock-up rooms opening by barred doors into the verandahs. They are placed back to back and are 15′ 3″ × 8′ 3″; they have earthen floors and have openings at the level of the floor, by which they are ventilated into each other and into the guard room, an arrangement which is objectionable. They have also roof ventilation. The guard amounted to 25 at night and gave seven sentries; there was not sufficient accommodation in the proper guard room for more than five, and it had to occupy, in addition, two end verandah rooms, and a tent which was pitched close by. The front verandah only is paved, and that but partially. There was no place for the relieved sentries to hang wet cloaks on, excepting the doors.

There is a privy and urinary for the guard, but they were in an offensive condition. A cesspit connected with them was in use.

The floor of the more southern cells is below the level of the ground in rear of the guard room.

Hospital Guard Room.—Is sufficient for only three men, being only 20′ × 16′ × 11′ high. The guard at night had a strength of 13 and gave four sentries. A tent had to be used to supply the deficiency in dormitory room. The windows have plank shutters and no glass.

Solitary Cells.—They are far below the present regulation size, having only 10 feet square of floor. There are ground ventilators, and there is in each a small window high in the wall. There is a barred as well as a plank door. The walls were surrounded with grass matting which is kept up throughout the year. It is said to be intended here to protect the walls from the heat of the sun's rays. The floors are mostly of concrete and they were broken. One is earthen. There is neither privy nor ablution room. Each prisoner has an earthen vessel in his cell at night.

The Horse Lines are in front and to the windward of the barracks. New stables are being built. Those lately completed are complained of as being offensive to those on duty when walking in the centre passages between the two rows of horses. The sides are open, the tiled roof lofty and supported on thick brick pillars; the eaves are low, and there is no roof ventilation.

The litter was deposited improperly to the windward of the Suddur Bazaar, between it and the Fort.

The Officers' Bungalows are in large gardens, in rear of the men's barracks, and some of them are on rather lower ground.

Drainage.—The ground among the barracks was clean and even. The lines and parade altogether cover 402 acres. The natural fall from the married men's quarters and the barracks near them is towards the Bhinga Nulla. From the hospital, and the barracks near it, and the officers' lines, the drainage might be conducted to a smaller water course in the rear. Besides a few surface gutters, there is no artifical drainage, not even where

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it is much required in the rear of the quarter guard and of the family quarters, where there are no plinths.

Occupation of Dormitories.—The established strength in India of a regiment of European cavalry is 515, or serjeants 38, and rank and file 477. Her Majesty's 3rd Dragoon Guards at the time of inspection had 449 in India, of whom there were present at Ahmednuggur, rank and file 378, or 99 less than the complement, while there were only 15 married instead of 45, which would be allowed at the regulated proportion of 12 per cent.

The 12 barracks afford sleeping room for 300 rank and file, single men, or for 120 less than the establishment, were 12 per cent. of the regiment married; but as, of the whole 402 now in India, only 16, or rather less than four per cent., are married, the deficiency may rather be estimated at 158.

There were 63 of the 363 unmarried rank and file present with the regiment who would have had no room in the single men's barracks, even if they had all been available as dormitories for the cavalry alone; but four barracks were in possession of the artillery, and one was in the hands of workmen, being paved, so that seven only were occupied by the cavalry. Since the publication of the order of Government to allow 90 superficial feet to each man, the number of occupants of the barrack rooms had been restricted to 25 each. The excess was accommodated partly in the vacant family quarters, to the extent of 121 men, partly in the band room and at the workshops, school-room, library, and several other buildings which were thought to require the presence of a soldier at night for security. Of the rank and file 37 were on guard, 25 were in hospital, and one was in the provost cell.

Hospital.—The hospital premises are at the left flank of the barracks, and are enclosed in front with a dwarf wall and railing, within which there are the guard room, the hospital serjeant's quarters, and the quarters and store room of the hospital steward.

The main building consists of two wards with the same N.W. by W. aspect as that of the barracks. There is another ward that stands out from the right end of the other two, towards the front and at right angles to them. In rear of the main building there is an enclosed court 140′ × 78′ with a covered passage on each side leading to the ablution rooms and latrines, while the cook-room, the apothecary's store, and the medical apprentices' room complete the quadrangle.

The building has its floor but little raised above the surrounding ground; it is of brick and lime mortar, with cut stone paved floors and a tiled roof. There are verandahs on all sides from 9 to 12 feet wide. There is accommodation for only 38, at the allowance of 130 square feet each; the number for which there should be accommodation is 61.

The wards of the main building are each 65′ × 24′, giving a superficies sufficient, at the proposed rate of 130 square feet, for 12 cots. These wards are separated by a passage six feet wide, between two walls which do not reach the roof. The side walls are 21 feet high. In front there are seven windows, and on the rear side of the ward there are only two windows and a door, much dead wall being left. There are two additional windows at the end of the left hand ward. Each has on a side seven clerestory windows, about three or three and a-half feet square, furnished with revolving shutters, both glazed and venetianed. The rooms have cloth ceilings. The front verandah is open, excepting a dwarf wall. The rear verandah is partially enclosed to form a very indifferent surgery and a dispensary, and two rooms in which the drinking water filters are kept. The left end verandah is walled up and ventilation is thereby impeded. The north ward is 70′ × 24′, or sufficient in area for 14 cots. Its height is 21 feet, and it is ceiled with cloth, and has such clerestory ventilators as the other wards have. Like them it has the verandah on one side open, and has on that side seven windows. On the other side the verandah is completely enclosed to form three rooms of various sizes. The largest of these three has been occupied by sick prisoners; but it, as well as the other two rooms, may be said to be devoid of ventilation, as each has but one door, which opens into the adjoining ward, and the windows in the outer low walls are small, and there are but one in each of the small rooms and two in the larger. The cook-room and the privy of the assistant apothecary are within 12½ feet of these verandah rooms.

There are two lavatories, which have tables for basins and a slipper bath, and in the south-eastern lavatory there is the appearance of two shower baths, which however are not screened, and which have not been in use for a long while. There is also the apparatus for supplying warm water to this lavatory, but it is not in use. The ablution rooms are drained to large masonry cesspits. The cook-room was dark and smoky. The floor is badly paved, and has wide crevices between the paving stones. The sink for fluid refuse is discharged into the ablution room cesspit.

Apprentices' Room is a stone and mud structure, built on the rear wall of the back court of the hospital. It is obstructive to ventilation. Its privy was in an offensive state.

Latrines and Urinaries.—There are two at the rear corners of the back courtyard. The latrines have 10 plank seats, but they are not enclosed separately for privacy, neither are they provided with soil pans, fitting so as to prevent the pavement below from being soiled. The urinaries are under the same roof and are furnished with tubs, and the washings of the floor flow to the ablution room cesspit. The latrines have no roof

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ventilation, and the offensive smell from the south one is sometimes perceived in the hospital wards.

Dead House.—It is outside the rear enclosure wall. It has no such convenience for the sweeper as is requisite in pathological examinations.

Isolation Ward.—It is in line with the main building, and to the south-west of it. It has a single room with an open verandah. The floor is very uneven, being made of bad bricks badly laid. The building is in close proximity to a bungalow occupied by the band master, and it is near the single wards for delirious or insane patients.

Single Rooms for Delirious Sick.—There are two such wards built together, detached from and at the south-west side of the hospital. They are on high plinths. They are furnished with fixed cots, and one has its walls padded. They are quite dark when the doors are closed.

Female Hospital.—It is a ground floor building at the left rear of the male hospital. The plinth is about two feet high. The walls are of brick and lime mortar, and the roof is tiled. There are two wards placed end to end; each is 13′ 3″ × 14′ and 18′ high; their aspect is to the S.W. by S., on which side there is an open verandah. At the left end the roof has been prolonged, and the verandah, which is widened, affords very indifferent quarters to the matron and her husband. The assistant matron and her husband occupied one of the two wards, while one-half of the rear verandah was being widened and its roof prolonged that it might be converted into quarters for them; in doing this, the only window on that side of the ward had been built up. The rest of the rear verandah is turned into a bathing room. The claims of the sick, as regards accommodation, quiet, privacy, and ventilation, had not been dealt with as of paramount importance. A cook room for the matrons was about to be built to the windward of the hospital and close to it. Very near this hospital, and within the hospital enclosure, there is a house that was allowed to be built by a medical warrant officer doing duty in the military hospital, and which he sold to a native inhabitant of Ahmednuggur, who is now the owner of it. This house is conveniently situated for the attendants on the female sick. It appears very objectionable that any of the ground of the hospital premises should be in the possession or be the property of a private individual.

INFORMATION received from the Medical Officer regarding Persons belonging to Her Majesty's 3rd Dragoon Guards who were present at Ahmednuggur, between 1st September 1864 and 31st August 1865.

	Average Strength.	Admitted Sick.				Remarks.
		Total.	Fevers.	Diarrhœa and Dysentery.	Hepatic Disease.	
Officers	20	56	13	9	3	Three children treated and died out of hospital, one of whom for dysentery.
Non-Commissioned Officers	38	48	7	7	3	
Rank and File — Married	23	30	9	2	–	
Rank and File — Single	79	645	123	47	19	
Women	32	23	7	5	–	
Children	48	11	6	3	–	

RECOMMENDATIONS for the IMPROVEMENT of the CANTONMENT and the CAVALRY LINES, BARRACKS, and HOSPITAL.

(1.) That the brigade parade ground be surface drained.

(2.) That the hollows in the ground between the Sudur Bazar and church on the one hand, and the Bhingar Nulla on the other, be filled up as earth and dry building rubbish become available for the purpose.

(3.) *Barracks.*—To complete the accommodation requisite for the established strength of a cavalry regiment, after deducting the present ratio of married men, new barracks for 158 men are required.

For the present barracks it is required—

(4.) That a saddle room be built.

(5.) That the front verandah be then cleared of the saddle racks, and be used as a day room.

(6.) That the serjeants' rooms at the ends of the barracks be provided with fixed louvres in the arch heads over the doors and windows, for ventilation.

7. That

(7.) That each barrack be provided with a temporary urinary with bamboo sides, and placed at the distance of 10 feet from the left rear angle of the main building.

(8.) That the present urinary building be converted into a bath room by lengthening it three feet towards the barrack, from which there will then be a descent of three steps instead of five as now. By heightening the walls to 11 feet and giving more window light. By making three compartments separated by partitions six feet high. Each compartment four feet square, and provided with doors for privacy, two of them to be fitted as shower baths, each with a reservoir to contain 10 gallons of water, and with a pipe having a rose nozzle, delivering slowly at a height from the ground of at least eight feet. Each compartment to have a small fixed seat in one corner at the height of a foot and a-half. The third compartment to be fitted with a perforated glazed vessel of from 9 to 12 inches diameter, raised on a support or pillar to a height of two feet and a half against the outer wall, and projecting from the wall sufficiently far to allow of a man stooping over it conveniently for private ablution. There should be over the vessel a pipe with a screw-down cock, delivering only a very small stream of water. The water should be supplied by pipe from the iron cistern. The perforation in the vessel should allow the water to flow away by pipe along with the other waste water of the ablution room.

9. The ablution room at the end of the barrack to have its masonry bench removed, and to be provided with fixed basins with overflow and discharge pipes and supply pipes with taps, as figured in Plate XV. of the Volume of "Suggestions by the Barrack and Hospital Improvement Commission."

10. For each barrack there should be a plate iron 500 gallon cistern, which should be placed over the entrance of the bath-room on a masonry support, at a sufficient elevation to supply through pipes by gravitation, both the reservoirs of the shower baths and the taps for the basins of the ablution room. The cistern to be filled by force pump.

11. The waste ablution water should be drained by pipes to pits sunk in the gravel close to the bank of the great nulla and above the level of its bed, so that the water may filter through or be absorbed in the gravel, or, if it be practicable, to drain to the rear of the lines. Unless used for gardens, the spot selected should be at least a furlong from the officers' houses.

12. *Barrack and other Latrines.*—That they be provided as soon as possible with soil pans fitting close up to the seat.

On representation made by the commission at the time of the inspection, the Brigadier General gave orders for the immediate discontinuance of the use of the cesspits, earth in a sufficient quantity to absorb fluid excreta being ordered to be used.

13. *Canteen.*—The floor to be paved.

14. It is recommended that a large iron-roofed lofty shed, open at the sides, and supplied with benches, be provided as a common day room, in which the men may meet and may have refreshments if they choose, but not liquor. This would relieve the now overcrowded canteen.

Gymnastic apparatus might be erected in this shed.

15. *Cook Houses.*—The neighbouring buildings should be joined, and have the fire ranges lower and in arched or domed recesses, having chimneys to carry off the smoke. They should be better lighted by windows. The sinks should be raised to an elevation that will admit of a tank cart outside receiving the water and fluid refuse. The cesspit should then be abolished.

16. *Library.*—The present library should be enlarged by adding to it the centre room, a wide archway being opened in the partition wall; and the room, when thus enlarged, should be paved.

17. The punishment shed, now occupied as a canteen by the artillery, should, so soon as available, be converted into a refreshment room for the use of those who frequent the library.

18. *School Rooms.*—New school rooms for adults and children should be erected. A portion of the site of the former gunshed, now the regimental workshops, seems eligible for the purpose.

19. *Ball Alleys.*—Both sides of the double fives court should be given up for the use of the men. An officers' racket court should be otherwise provided for.

20. A covered American skittle alley should be provided for the men.

21. *Workshops.*—The sanctioned improvement of the ventilation of the regimental workshops should be carried out.

22. *Plunge Bath.*—Strong fixed wooden benches should be provided, and also pegs for the men's clothes when bathing, should be firmly fixed in the walls.

23. An urinary, such as that recommended for the barracks, should be erected at the

north-west corner of the building. A doorway by which to approach it should be opened at the inner end of the north wall, and the passage should have its sides screened.

24. *Staff Serjeants' Quarters.*—The ventilation should be improved by inserting in the arch heads over the doors and windows, fixed louvres in frames made to revolve on a vertical axis.

25. *Family Quarters.*—The ventilation should be improved by the insertion of fixed louvres over all the doors and windows.

26. There should be a ridge ventilator to the quarters of each family, the area of the exit opening being at the rate of a square inch for every 15 cubic feet in the apartments. As the aggregate space in the two rooms, calculated from the design of those on the Gorporee plan, is 5,460, a cylindrical iron plate ventilator, if such be used, should have a diameter of 21½ inches, and it should be defended from the admission of rain by a conical cover, the lower edge of which should descend six inches below the level of the upper lip of the cylinder; and the cover should in no part be nearer to the cylinder than 4½ inches, thus leaving a zone of exit for foul air equal in area to the transverse section of the cylinder.

27. The verandahs should be double tiled.

28. A gutter to carry off the rain water should be made along the rear of the family quarters at the distance of six feet, and the surface of the ground, which is now on a level with the floors of the quarters, should be made to slope from the edge of the verandah, and should be made hard with rammed moroom or gravel.

29. The privies should be paved.

30. The waste ablution water should be conveyed away by pipe along with that of the barracks.

Quarter Guard.—As the present building is greatly deficient in accommodation for the guard as well as for prisoners, and as its plan is such as to preclude its being sufficiently improved for a guard room, it is recommended—

31. That a new quarter guard be built, with a detention room according to the standard plan, and that the present building be utilized by being converted into detention cells in connection with the guard.

32. It is recommended that, without delay, the privy and urinary be improved.

33. That a gutter be made along the rear of the guard building, at a distance of eight feet, to carry off the water when it rains, and that the ground be sloped towards it from the edge of the verandah.

34. *Hospital Guard.*—The building should be enlarged so as to give each man (deducting sentries) the same space as he is allowed in barracks. It should have glazed casements. Also a paved place in a sheltered part of the verandah with pegs on which relieved sentries may hang their wet cloaks.

35. *Solitary Cells.*—A privy and an ablution room should be at once provided.

36. The present small cells should be replaced as they fall into disrepair by new ones of the regulation size.

37. *Horse Lines.*—The stables that have yet to be built should have continuous roof ventilation.

38. The litter should not be deposited to windward of the lines, or of the Suddur Bazar, but should be carried to some spot south of the cantonment.

39. *Hospital.*—According to the ratios proposed by Lieutenant Colonel Crommelin, accommodation for 23 cots is wanting. It is recommended that in supplying this, the deficiency according to the standard plan, the new building be placed on the left flank of the present main building, but with an aspect only one point to north of west.

To make room for the new building, the single rooms for insane or delirious sick, and the isolation ward, which is now objectionably near to other buildings, would have to be removed, and also the houses now occupied by the bandmaster and the farrier major.

40. The removed isolation ward should be built on or near the site of the hindermost small store room, in rear of the farrier-major's quarters.

41. The single wards for insanes should be rebuilt also in rear, and at a greater distance than now from the main hospital.

42. The two wards of the present main building should be improved by the rear verandah being cleared of its present enclosing walls and partitions, and by opening, in the rear wall of the wards, doorways corresponding with the windows on the opposite side, the doors to be half glazed. The surgery and dispensary should have accommodation in the ground floor of the new building.

43. The

43. The left end verandah of the same wards to be also thrown open.

44. The enclosing walls and partitions in the rear verandah of the detached ward to be in like manner cleared away, and doorways to be opened in the rear wall of the ward, as proposed for the other two wards.

45. The ablution rooms to be furnished with fixed basins, with overflow and discharge pipes, supplied by tap and pipes from elevated iron plate cisterns, to be filled by mechanical means.

46. In each ablution room there should be two screened compartments with doors for privacy, one furnished with a tub bath, the other with an efficient shower bath. There should be arrangements for supplying warm water in the lavatories as well as in the bath compartments.

47. The waste ablution water should be carried off by pipes to the watercourse in rear, in the way recommended for the barrack lavatories.

48. The latrines should be at once supplied with soil vessels fitting close to the plank seats, to render it impossible for fluid excreta to fall on the pavement below.

It was arranged with the General Officer commanding the Brigade, that the use of the cesspits should be at once discontinued.

49. The latrines should have roof ventilation.

50. The cook-room should be improved by having its pavement relaid, and by having the fire range in a domed recess with a chimney.

51. It was recommended at the time of inspection that no waste water or fluid refuse should be allowed to pass from the hospital cook-room, but that all should be thrown into pails, which should be carried away by the sweepers. This arrangement should be continued.

52. The rear quadrangle should be thrown open by the removal of the apprentices' room and the apothecary's stores. These might probably be accommodated in the ground floor of the new building.

53. The dead house should have a small door made under its broad window, and but half of its width. This should open into a narrow paved passage about 2½ feet wide, having a screen wall 5 feet high. The end of this passage towards the front of the building should also be screened.

54. *Female Hospital.*—All the verandahs should have their enclosing walls and partitions removed, and glazed doors should be put in the rear walls of the two wards.

55. Roof ventilators should be made with outlets of a square inch of area to 15 cubic feet of room.

56. An ablution room and a privy under the same roof, but separately ventilated, should be built about 10 feet from the left rear corner of the hospital, and it should be approached by a covered passage.

57. The neighbouring house, which has been alienated to a private possessor, should be obtained by Government, and should be converted into quarters for the matron and the assistant matron.

ARTILLERY LINES.

The artillery lines, covering about 120 acres, are nearly S.S.W. of the cavalry barracks, and occupy the south-west end of the cantonment, where semi-permanent barracks for a detachment of infantry were erected at the time of the mutiny. When the head quarters of the artillery were removed to Kirkee, the cavalry took possession of the artillery barracks and the troop of horse artillery occupied the infantry barracks. Those latter barracks, however, were considered so bad and unwholesome for the men, that they were abandoned by them, and converted into stables.

Since that time the artillery men have occupied four of the barracks of the cavalry, and have shared in the use of several of their subsidiary buildings; those buildings and barracks have been already noticed in the report of the inspection of the cavalry lines. The artillery has its own male and female hospitals, a quarter guard, and stables.

Barrack Site.—A site for new barracks, according to the standard plan, has been selected and reported on by a station committee. The ground, like that of the greater part of the cantonment, is mostly clayey and retentive of moisture, or black soil, and there is only a limited portion of it that is sandy or gravelly. This portion is on the north-western gentle declivity of the continuation of the rising ground on which the cavalry barracks are built. On the summit of the ridge and its south-eastern slope there is a layer of black soil, which, by sinking trial pits, was found to be in some places five feet deep.

The position of the female hospital which has lately been built, limits the extent of available site for the proposed barracks, and although it would be preferable to have the

three buildings in line, it may be found necessary to place them in echellon. It is very desirable that a due interval, not less than a hundred yards, be left between the hospital and the nearest barrack, and that the new buildings do not obstruct the breeze which the hospital should have.

It is found that the Station Committee has recommended that the barracks should have a west south-west aspect, in order that the occupiers of them should not have the annoyance that they would experience from the dust borne by the prevailing wind, were they to face that wind.

The great advantage that accrues from having thorough perflation in barracks, ought not to be relinquished on account of the inconvenience that is said to have been experienced in the cavalry barracks from the dust in the hot season, since by means of wet tatties, and the proper management of the glazed shutters of the ventilators, that inconvenience could be avoided or greatly lessened.

From a table of 730 observations, made morning and evening, on the direction of the wind during 12 consecutive months, from July 1861 to June 1862, which was prepared by the medical officer of the Native Infantry Regiment stationed at Ahmednuggur, it is found that the number of half days on which the wind blew from the different points of the compass were—

North	23	South	18
N.E.	93	S.W.	127
East	8	West	89
S.E.	52	N.W.	320

And from a table of the results of observations made at the Civil Hospital in the city morning and evening during the three years 1862 to 1864, it is found that in the 2,192 observations the direction of the wind was from the

North	in 50	South	in 14
N.E.	„ 381	S.W.	„ 421
East	„ 29	West	„ 153
S.E.	„ 148	N.W.	„ 996

The number of days in the year on which the wind was from the south of west was comparatively small, yet because it blows from that direction in the hot season, when the influence of the breeze is most to be desired, the aspect of the barracks should be such as to allow of some benefit being derived from it, while profiting from the more prevalent wind that blows from the N.W. at other seasons. This combined object it is thought may be attained by making the buildings face one point to the north of west.

Quarter Guard.—The guard-room is a central apartment, on each side of which the verandah is enclosed to form places of confinement for prisoners. The floor is earthen, the tiled roof is unventilated. The windows are closed with plank shutters only. It was too small for the guard, part of which had therefore to sleep in a tent. The detention rooms are deficient in ventilation. This guard-room is far away from the site chosen for the new barracks, and it is understood that it will be soon replaced by a new building at the new site. Were it expected that the present site of the guard would continue to be occupied, all the defects that have been mentioned would require to be remedied, and this would still involve the erection of a new building.

Horse Lines.—These are to the north-west of the men's hospital, at a distance of only about 175 yards from the building. The "temporary barracks" formerly used by the men are occupied as stables.

The litter was found to be deposited to windward of the cavalry barracks for sale. It is purchased as food for the buffaloes that give milk for the inhabitants of the cantonment.

Drainage.—The natural fall of the ground from the new site of the barracks is towards the Bhingar Nulla below the cantonment. There is no artificial drainage.

Hospital.—It is in a line with the cavalry barracks and hospital, and at the distance from the enclosure of the latter of about 460 yards. It has the N.W. by W. aspect which they have.

It is a ground-floor building consisting of two wards communicating by a wide archway. The walls are of brick and lime mortar. The plinth is but little raised. The floors are paved and the roof is tiled. The wards are each 60′ × 24′, giving 2,880 square feet, which, at the lately proposed rate of 130 feet, afford accommodation for 21 sick, or about the regulated number for which provision has to be made, at the rate of 15 per cent. of strength, as in small bodies of men. The walls are 21½ feet high, and there are clerestory windows provided with proper revolving glazed shutters. The windows in the front of the wards are so distributed as to allow of a cot being placed between every two; they are provided with glazed casements. The verandah in front is open; that in rear is in part enclosed to form a surgery and other auxiliary accommodation, and this arrangement occasions obstruction to the ventilation of the wards, from there being left but one window and a door, with much dead wall between them. Sanction had already, it was said, been given to clear the rear verandah of all its present enclosing walls and partitions,

tions, and to open windows or doorways on that side of the ward, symmetrically as to position with those in front.

Adjoining this new hospital there still remains the old building of "temporary" construction, which was now to be appropriated in part for native sick, while part was to be paved and converted into a surgery and storeroom, to supply the place of the present ones, that are to be removed from the rear verandah of the new building.

Latrine.—At the right rear angle there is a new latrine which has not yet been used. It is approached by a covered passage 58 feet long. It has so many as eight partitioned seats. The new regulation soil-pans had not yet been supplied. The compartments have no doors nor screens in front.

Ablution-room.—It is at the left rear angle of the hospital. The floor is but partially paved. There is no screened compartment for bathing. The appliances are merely such as have hitherto been usual in hospitals; there was not sufficient command of water, and the waste water was collected in a cesspit.

Cookhouse.—It is old, and some necessary alterations had already been arranged for.

Female Hospital.—It is a new building, not yet completed, situated to the south of the male hospital. It has a W.S.W. aspect. There are two ground-floor wards, with broad verandahs, which are being in part enclosed to make quarters at the left end for the matron, and to give a bathing-room and a privy at the right end. In thus utilising the verandah, the intended end windows of the ward have been built up. The wards are insufficiently ventilated. The position of a proposed small cook-room for the matron had not yet been fixed, and the Commission recommended to the executive engineer, that it should be at the distance of 20 feet from the left rear angle of the main building, where her quarters are.

The hospital premises were not yet fenced.

Isolation Ward.—This building, which is at present occupied as a female hospital, is between the new hospital and the male hospital. It has an earthern floor There are no roof nor other ventilators, and the open verandah is only seven feet wide, and is covered with only a single layer of tiles.

The B troop of the E brigade Royal Horse Artillery has been at Ahmednuggur only since 1st January last.

Recommendations for the Improvement of the Artillery Lines and Hospital.

58. *Barracks.* — It is recommended, for the reasons stated, that the aspect of the proposed new barracks be west by north.

59. *Quarter Guard.*—That, whatever the site for the guard may be, a new building be erected, affording accommodation of the larger amount and better kind that is allowed by the new rules.

60. *Hospital.* — The proposed clearing of the rear verandah of the main building should be carried out, and the openings in the rear wall of the ward, to correspond in situation with the windows in front, should be doorways, furnished with half-glazed doors.

61. The eight compartments of the new privy being more than enough, the two farthest from the entrance should be reserved for keeping the close stools that may have to be used in particular cases; that part should have a door to separate it from the rest. The compartment nearest the door of the privy should be fitted to hold a urinal. The other five compartments should, without delay, have soil-pans fitting close up to the plank seat. Fixed screens, such as are shown in the privy in the standard plan of quarter guard, should be erected before the entrance of the compartments.

62. The pavement of the ablution-room should be completed. The room should be provided with fixed basins, with overflow and discharge pipes, and supplied by tap from pipes leading from an elevated plate-iron cistern of the size to contain 500 gallons. The cistern should be placed at an elevation sufficient to feed a shower bath that has a fall of eight feet. The cistern should be filled by force pump.

63. A compartment, four feet square, should be screened off in the ablution-room for a shower bath. The shower should be delivered by a pipe with a rose at the height of at least eight feet from the ground.

64. The waste water of the ablution-room should be carried by pipe to the neighbourhood or the watercourse in rear, or to be used for gardens.

65. A moveable pail should be used in the cookhouse for waste water and fluid refuse. No cesspit should be allowed.

66. *Female Hospital.*—The right end verandah should be cleared of enclosing walls and partitions, and the windows of the ward that have been built up should be opened

out as doorways and provided with half-glazed doors. The other windows of the wards should also be converted into half-glazed doors.

67. The archheads over the doors and windows should be fitted with fixed venetians, in frames made to revolve on a vertical axis.

68. An ablution-room and a privy under the same roof, but separately ventilated, should be erected at the distance of 10 feet from the right rear corner of the verandah of the hospital. This building should have a covered approach, and the side of this passage next the male hospital should be closed with honeycomb masonry.

69. The premises should be fenced.

70. *Isolation Ward.*—The building proposed for this use should be paved; it should have roof ventilators and ventilators over the doors and windows. The verandah should be widened to 10 feet, which the slope of the roof will allow. The verandah should be double tiled.

Native Infantry Lines.

These lines occupy 131½ acres, and are at the highest part of the cantonment, and on dry ground, consisting of moroom, or the gravel of disintegrating trap, through which the rock here and there protrudes, and the ground has a fall in front and in rear, and also towards the city.

The lines were originally laid out for a regiment 1,200 strong, and lately they afforded accommodation to the depôt and families of a regiment absent on field service, in addition to the regiment that now has them. On the depôt leaving Ahmednugur, the huts they vacated were found to be in a very filthy condition, and were removed. The streets run east and west, and thus are favourably directed for ventilation by the prevailing winds, but this arrangement is rendered in a great degree nugatory by the native officers' huts being built in continuous lines across the west end of the streets, and having behind them a continuous belt of gardens with trees and lofty shrubs, enclosed by a wall seven or eight feet high.

The huts are badly constructed and their walls are much too low. Many had the thatch in bad order. This was attributed to the men having difficulty in meeting the increasingly heavy expense of renewing it. From what was learnt, the former occupants of the lines had been in the habit of making pits in the ground close behind their huts for waste water. The ground has thus, it is feared, became to a considerable extent impregnated with organic matter.

The right, or south flank of the lines, is only 200 yards distant from the city wall. The interval is of rocky ground, and is occupied only by the regimental hospital.

On the west side of the lines, behind the gardens of the native officers, there is the regimental bazar, through which the Aurungabad road passes. The bazar is said to have a population of 185 persons, of whom only three or four families are considered by the officer commanding to belong to his regiment.

The houses on the east side of the road, or that next the lines, are mostly mean mud huts. On the west side of the road there are a few substantial houses, among which there is one conspicuous upper roomed one. Judging from plans of different dates, encroachments by intruders appear to be increasing, and there is now an interval of only 125 yards between the bazar and the city wall, and if the evil be not remedied, the men's lines will soon, it is feared, be continuous with the town.

The ground between the lines and the town was clean up to the base of the city wall, as indeed it was found to be both in all the part of the cantonment that is bounded by the wall, and elsewhere.

Close under the wall, near the Mungul Gate, there are a few huts that are occupied by persons who do not belong to the cantonment, and there are some huts round a tomb near the gate, that form a nucleus round which others are likely to be congregated.

With reference to the two propositions that were lately made by the former officer in command of the station—the first, that the lines should be rebuilt and tiled; the second, that the lines should be removed to another site at a greater distance from the city—the Sanitary Commission visited the ground and was accompanied in its inspection of the lines by the Brigadier General and by the officer commanding the regiment, who favoured it with all the available information they had, and with their opinions on the subjects of investigation.

There was no site mentioned to the Commission as preferable to the present one, nor was there any seen within the present cantonment limits that would be, in all respect, equally good. To find an open, elevated, and dry site, it would be requisite to go considerably beyond the present military limits, and any such extension of the now wide-spreading cantonment, is considered to be inexpedient. The chief objection to the present site is its nearness to the city. This objection would be stronger were the intervening ground not under military rule, which enforces cleanliness up to the wall.

To improve the present lines and site it is recommended that—

71. The lines be rebuilt as nearly according to the new plan as the ground will admit of. The right or south flank should on no account be brought nearer to the city wall than it is now, but it should rather, if possible, be removed farther from it. Even so little

as 20 yards added to the present interval, is an increase that under the circumstances would be of advantage.

According to the new plan of native infantry lines, the streets would not be obstructed by the native officers' huts.

72. The new huts should be tiled. Besides the smaller liability to fire and other advantages that there are in tiled huts, the ventilation is much freer through the interstices of the tiles than through the thatch.

73. The present huts of the native officers, and the gardens with their walls, should all be removed.

74. The ground between those gardens and the road which passes through the regimental bazar should at once be cleared of all huts or houses belonging to squatters, and none of the houses there that belong to persons who have a legal property in them should be allowed to be rebuilt, but on their falling into disrepair should be removed, and the ground on which they stood should be kept unoccupied.

75. As the Aurungabad road, where it passes through this bazar, is said to be inconveniently narrow for the traffic, it may be found necessary to widen it. If this takes place, the houses that are removed in doing so should not be rebuilt.

76. The clear interval between the bazar and the town wall that has been lost should be regained, and when the lines are newly laid out, the distance of their right flank from the town wall, which is then determined, should be made also the measurement of the interval between the bazar and the city. The houses falling within that interval should be removed, compensation being given to the owners. The substantial upper-roomed house which has been mentioned might be excepted, on account of its probably high price; but when it falls into a state requiring it to be rebuilt, it also should be removed.

77. The huts near the Mungul gate of the town and those beside the tomb, that have been mentioned, should be removed.

Fort.

It stands in the part of the cantonment that is between the city and the Bhingar Nulla. It is nearly circular, and about 600 yards in diameter. Its stone walls are high and in good repair, and it is surrounded with a deep ditch about 50 feet broad, the bottom of which was mostly covered with coarse grass and shrubs. At the south end the water was not fully drained off.

The fort is at present used only for ordnance and barrack stores.

78. It is desirable that the ditch should, if practicable, be more perfectly drained than it now is, so that water may not lodge in it.

Bazars.

The Native Infantry Regimental Bazar has already been noticed, and certain recommendations regarding the Sudur Bazar have been included in the separate report on the village of Bhingar.

There is another bazar, which belongs rather to the town than to the cantonment, although it is outside the walls and is under military rule. It is the Mundaee, between the Jaenda gate and Bhuwa Bungala gate. It is a hamlet containing the tomb of the Bhuwa and a considerable number of mud huts that are placed, with but little regularity, on uneven ground, without any made road among them. Among other inhabitants there are butchers. They slaughter the animals at the cantonment slaughter-house.

The ground around and among the huts was clean, but the place is unsightly, and as the population have no apparent connexion with the requirements of the cantonment, it seems—

79. To be advisable that the ground should be gradually resumed as the huts fall into decay.

It may be mentioned that the cantonment magistrate follows a method that seems to answer well for maintaining cleanliness in the premises of the residents in the bazars. He provides for the regular visits of sweepers and for the removal of filth from the privies of all who contribute a small sum—it is either half an anna or an anna—monthly to a general fund that is formed for the purpose.

Water Supply.

There are very few wells that give good drinking water, and in the cantonment well water is used only for the irrigation of gardens and for the plunge-bath.

Drinking water of good quality is supplied from cisterns fed from underground masonry conduits that bring it from the springs on the sides of the hills from four to six miles distant. The Kapoorwara conduit supplies the Native Infantry lines, and the Bhingar conduit supplies the European part of the brigade and the Sudur Bazar. The supply continues throughout the year, but it is rather scanty in the hot season.

A grant has been given recently to restore the Shahpoor aqueduct, that by it the supply

of water to the European troops may be increased. This aqueduct has its source in a ravine at the foot of the hill on which Salabut Khan's tomb stands, and used to give water to the fort of Ahmednuggur. The ravine is small and of but little depth, and there are two masonry dams across it, which are said to have been built about 500 years ago, at the time the conduit was constructed. The upper dam is now useless, as it has a breach in it. The lower one is unbroken, but the tank that it once formed has been completely silted up, and the accumulated soil is cultivated.

It is from the base of the second dam that the conduit is being restored. Near its head the conduit passes under the high road and opens into a large open dipping well, which also is being restored from the ruin caused to its masonry by a tamarind tree that grew too near it. On the side of the well opposite to where it enters, the conduit takes a fresh departure.

This well is within a few feet of the highway, and is close to a Seraee, where poor travellers halt. It is very objectionable that the water should be thus exposed near its source to defilement from the dust of the road, and from impurities conveyed by those drawing water from it, and perhaps bathing in it.

The well has long been used by travellers, and they might still have a cistern provided for their use, to be filled from the aqueduct, but—

80. It is most desirable that the well should be covered and closed, so that the bulk of the water may be defended from pollution.

Sanitarium.

The large lofty octagonal building that stands over Salabut Khan's tomb has for some years past been used as a barrack, to which some of the European troops are removed in the hottest months.

It is five-and-a-half miles distant from the fort, and nearly due east of it. The hill is said to rise 617 feet above the plain, so that the elevation above the sea-level is only about 2,500 feet. The relief from the heat that is said to be experienced by those who resort to it is, however, considerable. The road up the hill was found to have been in great part washed away during the rains, there having been no drains or other means of diverting the current of water.

The top of the hill is terraced, and the building is on all sides exposed to the wind.

The tomb is in the basement, and over it there is a ground floor, consisting of a central hall doomed at a great height, and a closed verandah, which has been partitioned and appropriated for stores and other purposes. Between the basement and the domed roof there are two lofty tiers of gallery; the lower has had both its inner and outer archways built up, and the outer ones have been furnished with glazed casements to render it habitable. It is in this gallery that the detachment is accommodated, and it gives sufficient area for about 35 or 36 men. The upper gallery might in the same way be made to accommodate a similar number; but the means of amusement and exercise are very limited, excepting to those who are able and like to ramble on the neighbouring stony hills in search of game. There is a roughly built privy.

81. Proper ablution accommodation, which is still wanting, should be provided.

It is recommended likewise—

82. That the upper gallery also be prepared for the accommodation of men.

REPORT on the Sanitary Condition of the Town of Sholapoor.

(Inspected in January 1865.)

Sholapoor, in latitude 17° 40′, and longitude 76° east, is about 182 miles from the sea, and has an elevation above it of about 1,820 feet. Until the close of last year it was the head quarters of a zilla, but now it is included in the Poona Collectorate, and is the chief town of the Sub-Collectorate of Sholapoor.

The country around is seen, when passing over it, to be undulating and intersected with watercourses; but there are no hills near enough to break the even line of the horizon. The watercourses are mostly dry, excepting in the south-west monsoon; and, with the exception of a very scanty supply in the Balaeeche Ora, the nearest running water is the River Seena, eight miles distant.

Much of the neighbouring land is gravelly and barren; on that which is arable, cereals, pulse, oil seed, and cotton are cultivated, and the crops are dependant on the rain and dew. The annual rain-fall has been stated to be 26 inches, and to be subject to wide variations.

The mean temperature is about 80° Fahr., with a yearly range of about 30 degrees.

The ground on which the town and military cantonment, that adjoins it on the south, stand, resembles that of the surrounding country, being in part rocky and gravelly, and in part composed of productive soils, both brown and black. The rock is altogether trappean, and its beds are mostly amygdaloidal, the contained minerals being generally zeolites.

The town is built on slightly elevated ground, having a fall to the east and to the north. There is a high commanding mound on its south-east, formed of the material excavated

excavated from a large tank on the south of the city, named after Sideshwur, a Hindoo idol. This idol has a temple on an islet in the tank.

Sholapoor, in the year 1851, was reported to have 30,819 inhabitants, occupying 5,409 houses, of which 2,904 were flat-roofed, 295 tiled, and 1,810 were thatched. Since then a census has not been taken. From the increase that is apparent in the size of the eastern suburbs, it is probable that the present population is now considerably greater than what is shown above.

The ground belonging to the town, that is thickly built on, is roughly estimated to be 281 acres, and of these 214 are within the wall, and 67 acres are suburban; were the gardens and portions of ground that have on them only thinly scattered habitations to be taken into the estimate, the suburbs would appear very much larger.

The wall is high, and is built continuously round what was once all the town; it is without bastions or military works, and owing to the fancied security from robbers which it gives to those whose dwellings are within it, a yearly grant of 500 rupees is made from the municipal fund to keep it in good repair. A large portion of the taxpayers reside outside the wall.

A considerable extent of ground within the wall is still vacant, and efforts made by the magistrate of the zilla to draw the extension of the buildings in that direction failed, and a plot of ground outside the wall on the north-west, that was given to the Wudur, a low caste working as stone-cutters, whose impure vicinity the other inhabitants disliked, remained unoccupied, or was soon deserted by them. The want of water is the chief known objection to the occupation of the west end of the town. The only wells are on the east, and in this direction the suburbs have grown. The municipality lately applied for Government assistance to include in the town some land for building purposes on the north-east, and in or near which are situated the best wells from which drinking water is procured. The assistance asked for was not accorded, and for sanitary reasons it is desirable that the ground about the wells should not be built on, as its occupation by dwellings would sooner or later lessen the purity of the water.

The present magistrate has renewed the endeavour to draw the population westward, and with better success. New streets and a large market-place are laid out, and some monied men, as a speculation, are building, with a view to letting the houses for rent, This part of the town is called Nuwa Peth.

The town is divided into peth or wards; these are very unequal in size. Mungulwar Peth and Kusba Peth cover nearly the whole of the walled part of the town, the Mungulwar being the north-eastern, the Kusba Peth being the western and southern portions. Sookurwar Peth is very small, and lies in the south-east corner, between the wall and the road running from the Beejapoor Gate to Bugwan Ves. Nuwa Peth appears to be a new name given to the south-west part of Kusba Peth, near the new gate.

The extra-mural peth also differ much in size. They are in the following order, beginning with the most northern:—Gooroowar and Gunesh, Baboo and Sakur and Somwar, all on the east, Sunwar and Padshaon, the south-east, and Begum and Sideshwur Peth, on the south. The last one mentioned has but a few huts on it; and in Begum Peth are the gaol premises, and a considerable extent of open ground, while Padsha Peth is mostly occupied with cultivated fields and gardens. The other peth are nearly fully built over.

There are nine gates or ves for ingress and egress. They are the Fort Gate, Panee Ves, and Beejapoor Ves, on the south, Daree and Koomber Ves, on the east, Tooljapoor Ves, on the north, Balaee Ves, north-west, and Dehgaon Nuwa Ves, on the west. The Beejapoor Gate-street is about 1,000 yards long, and runs in nearly a straight line through the city to the Tooljapoor Gate. Chatee Gullee crosses it at right angles, and passes from Koombar Ves to Balaee Ves, and these are the only two streets that have generally known names. In Beejapoor Gate-street, where it crosses the limit between Sookurwar and Mungul Peth, there is a large gateway called Bugwan Ves. Northward of this the street is wide (perhaps 40 feet), and lined with shops, and would be spacious were it not that there is along its middle a row of little shops, or masonry-built stalls, in bad repair or ruinous, called Men Bazar. Chattee Gullee, or the cloth market, is in like manner encroached on and disfigured by its Men Bazar. It is the desire of the magistrate to have these Men Bazars removed; but the obstacles to this measure have not yet been overcome. With the exception of these two streets, and those recently laid out in Nuwa Peth, the roads and alleys are narrow, crooked, and interrupted in their course, and unfit for traffic by wheeled vehicles, and they are, besides, too few for free traffic and intercourse by those on foot. The principal ones are metalled, and have open side-gutters lined with stone. Owing to encroachments, and to the non-enforcement of the regulation requiring houses to be built in line instead of with projecting angles, the streets are zigzags. A large portion of the smaller streets are not metalled, or if they have ever been so, they are now so much out of repair as to retain no trace of it. To enable the municipality to guard better than heretofore against encroachments on public ground by private persons, a survey of the town was made, but it has not yet been delineated. The sum of 2,000 rupees has been devoted to this useful work.

The general appearance of the town, in passing through it, is that of an ordinary village. The houses are, with the exception of those in the Beejapoor and Chatee Bazar, in enclosures that present towards the street their dead walls of sun-dried bricks, or stone and mud, generally from eight to twelve feet high, a small doorway being the only opening seen. On entering there is a yard from 10 to 12 feet square, on the sides of which are the dark rooms or cells in which the people live, having three or four feet of open

verandah before them. The yard may communicate with one or more others, or there may be a labyrinthine succession of such courts. Even the houses of the more wealthy are masked towards the street by a more or less roughly built dead wall. Very few houses, except in the bazars, have windows opening towards the road; none were seen with glazed casements. The rooms are generally exceeding sparingly ventilated, and lighted by an aperture about a foot square, passing upwards in a slanting direction through the thick wall. Visitors are received in the open corridor or verandah that surrounds the small entrance court.

The houses within the walls are visited by sweepers at longer or shorter intervals. The privies are vile and offensive, and in the enclosures of the poorer inhabitants they consist of a screen wall, behind which there is no vessel, not even a pavement, merely the bare ground, which thus becomes saturated with filth. The foul waste water of houses abutting on a street with a side-gutter, is discharged into that gutter, there to evaporate.

When there is no gutter, an unglazed earthen jar is sunk at the side of the lane or street, and a pipe passing through the wall pours the liquid into it. When full, the jar is supposed to be carried away outside the town to be emptied. Some of the wealthier houses have masonry cesspits instead of the porous jar, and in this, as well as generally in the former case, the contents are baled or thrown out on the neighbouring road, there to be absorbed or to evaporate. Many merely dig a hole at the side of the street for the reception of the liquid refuse; and this more pernicious, absorbing cesspit, gives them less trouble than the jar, as a longer time elapses ere it requires to be cleared out. When the time does come for this, the fetid mud accumulated in it is scattered over the neighbouring ground. Were it not for the dryness of the air, human life could scarcely be maintained under these conditions. In a moist climate such prevalent uncleanness would occasion devastating pestilence.

The surface-gutters at the sides of the streets for the monsoon drainage are not truly laid, and do not all pass on their contents. Part of the drains run to the north, while others discharge into the Lenkee, a watercourse on the east, that runs through Padsha Peth, and parallel with the town wall between Sakur and Sunwar and Bapoo Peth, and then between Gunesh and Gooroowar Peth, still northward, towards the Maha Ora (or great watercourse). This Lenkee is the place which a great part of the poor inhabitants of the suburbs frequent, as the public latrines are too far off for many of them, and their own premises, being small, do not afford the shelter that the inhabitants inside the town wall take advantage of in their enclosures. It is, besides, the receptacle of the refuse water from dyers' and tanners' yards, and from a distillery: and, owing to its uneven bed, the foul fluid does not always flow on, but lies in stagnant pools, as was seen at the time of the inspection.

The municipality has done much towards providing latrines for the people, and it is willing to make further provision. At the north end of the town, outside the Balace Ves, there are two ranges, one for males, the other for females, with a hundred seats each. At the north-east of the Toolijapoor Ves there are other two extensive ranges, and on the south, beyond the Beejapoor Ves, there are other two. These latrines have sweepers with carts in attendance, and, although faulty in construction, they are evidently a great benefit to the place.

An attempt has been made to supply another want, and six or seven urinaries have been erected in the town, but they are not used as intended, but are perverted to a more offensive purpose.

There are many merchants in Sholapoor, and they deal mostly in grain and cotton. The chief trade carried on by the people is weaving, and connected with the weavers there are those who dye the yarn. This latter occupation is offensive. The most offensive trades, however, are the tanner's, the distiller's, and the brickmaker's and potter's. It has already been mentioned, that the foul refuse of the dyers', tanners', and distillers' works are thrown into the Lenkee, on the east of the town. The brickmakers' kilns are in Sideshwur Peth at the south part of the town, close to the large tank, and from it the supply of clay is obtained. This clay is sold yearly by auction, and the proceeds of the sale are taken by Government. The fuel for the kilns is the sweepings of the town, that may be daily seen carried out on donkeys to be stored at the kilns for use. Very recently a person, seemingly without authority, has established a brick kiln a little south of the gaol, and close to the gaol burial-ground and to the executive engineer's store. Within the wall potters carry on their trade in Kusba Peth, near the temple of Mulkarjoon. There are are no slaughter houses, and both beef and mutton butchers kill the animals in Kusba and Mungulwar Peth, without any regulated supervision of their premises. Milch and labour cattle are kept in extremely filthy houses and yards within the town.

Water is obtained chiefly from the Sideshwur tank, which has been excavated at the south of the town. For some time after the rains this tank presents a surface of water of about 40 acres, but it soon diminishes in extent, and its impurities become concentrated, and in the hot season it dries up. The gathering-ground of the water is east of the cantonment, and a trench to conduct the stream may be seen near the Collector's house and office. The tank has been lessening in depth from accumulation of silt, while the efficient clearing out of the annual deposit has been neglected. Now a retaining wall is being built to prevent the earth and gravel on its banks from being washed into it by heavy rain. Continuous with the tank, there is on its west side the fort ditch. This ditch has generally less depth than the tank, and a swampy bottom is exposed soon after the rains, and, as the surface is very considerable, its injurious effect on the health of the neighbourhood

neighbourhood must be very considerable. During the mutiny the fort was garrisoned by a company of European soldiers, and, if my information be correct, there were 80 per cent. of them at one time suffering from the hurtful malarious influence.

The Sideshwur tank was formerly liable to pollution until the magistrate of the zilla employed some of the district police in protecting it, and although those drawing water follow the ancient custom of standing in it and scrubbing their water-vessels, no other washing or bathing is seen. There are several wide stairs at the sides of the tank, by which the water is reached, and near one of these, called the Gunputee Ghat, between the fort and Panee Ves, there are troughs at which the people wash, while the waste water is conducted by sewer away from the tank. Near the Panee Ves there is another range of washing-troughs, with like provision for carrying the waste water in a proper direction. This arrangement is very good.

On the east of Sakur Peth there is Khundoba Tulao, a large quarry hole in which the water flowing from the neighbouring surface collects. This water, which the people consider good, is greatly defiled, for persons were seen bathing and washing their clothes in it, while others were drinking or drawing drinking water from it beside them. The quarried surface is uneven, and a gang of convicts was seen digging gravel without method, and thus increasing the number of pits which the neighbouring inhabitants make receptacles for filth.

At the census of 1851 there were found to be 86 wells available for the people, and 42 of them that, for part of the year at least, gave drinkable water. The present number of wells is unknown. The well water that is most valued, and which is found in greatest abundance, is in the fields on the east of the town. The Joor Baoree beyond Koombar Ves, is especially esteemed, and it was to benefit more from it that it was proposed that the town extension should take place in that direction.

The municipality has been profuse in its liberality to the low caste portion of the people, so that now there is more, as regards water, to foster illiberal caste prejudices among these, who are by other Hindoos considered beyond the pale of social intercourse, than there is among the people of what is called high caste. At the side of the Hyderabad road, where it passes between Gunesh Peth and the Joor Baoree field, there have recently been built four large wells of good masonry, each with its stair for the convenience of drawing water. One of these is for the mhar, one for the mhang, one for the chambar, and the fourth for the dhor, or those who dye the hides which the chambar tans. These people say they will not all draw water from the same wells, and their fastidious or pretentious scruples have been thus expensively cherished by the municipality.

The scarcity of good water has led the townspeople to seek it in the military cantonment, and many have in the hot season been in the habit of sending for it to the reservoir at the Moteebagh. Now a cistern has been built below the embankment of the reservoir to catch the leakage water, and iron pipes, to a length of upwards of two miles, are being laid to the western side of the town.

At the north of the town, and also beside the Sideshwur tank, there are plantations of Neem trees, which a former collector, Mr. Goldfinch, made with a view to their becoming shady places of recreation for the people. The trees are thriving, and promise soon to answer the benevolent purpose of their planter.

The municipality has lately built a vernacular school-house near the Tooljapoor Ves, and the English school-house in the same neighbourhood is being enlarged at an expense of from 10 to 12,000 rupees, of which one-half is to be paid by the town, and the rest by Government.

A charitable dispensary has been established within the last few months, but it lies at present under the disadvantage of the want of a proper house. The difficulty of supplying this want is great, as, owing to the plan of construction followed at Sholapoor, none sufficiently lighted or ventilated, or provided with the most ordinary of the conveniences required for sick persons, can be found ready built.

The magistrate, Mr. Duff, directed my attention to the fouzdar's office and gaol in Kusba Peth. The office is a very low-roofed room with a deep verandah opening on the narrow street, and by that one side receiving all the little air and light it has. We found it crowded with persons who were there on business, and it had a close unwholesome atmosphere.

The gaol on the other side of the road has its courtyard on a lower level than the street, and it was said that in the rains it was a pool of mud. On the left hand there is a broad shed with its roof drooping towards the court so low as that one has to stoop on entering it.

In this the prisoners pass the day and cook their food. On the right hand there is a deep verandah with a roof as low as that of the opposite shed, and approaching it so that the little court between is left but seven feet wide; behind this verandah and opening into it there are three rooms, each 20 feet 4 inches long by 10 feet 4 inches broad and 11½ feet high. The door is of plank, and when it is closed the only apertures for air are two ventilating holes each four inches square in the terraced roof and a window in front 20¾ inches high and 14¼ inches wide, but this width is reduced to 9¼ by the iron bars that obstruct it. One of the three rooms is reserved for female prisoners, and the other two are for males. The number which we were told might be locked up at night in one of these rooms was 12. With that number in it, each inmate would have but 17½ square feet of floor and 201 cubic feet of space, with an inlet for fresh air of 16 square inches and an outlet for foul air of 2⅔ square inches only. At this inspection there were 17

male prisoners, each with 25 feet of area and 225 of space, an allowance so deficient as to be very likely to engender dangerous disease.

The zilla or district gaol is south of the city in Begum Peth. It has within the last few years been much improved by the addition of a yard 150 feet wide at its west side. It was somewhat overcrowded, but the judge, who was present at the inspection, stated that a considerable number of the prisoners was to be at once transferred to Kuludghee. The cells called solitary, 10 feet by 7 feet and 10½ feet high, are built in two rows close to each other, and are most disadvantageously situated for ventilation, being but 6 feet from the boundary wall, which is 17 feet high. These cells, that are too small for one inmate, for whom they were designed, were being occupied by two persons. The drains from the cooking places lead towards the gaol garden, about 100 yards distant, but they were found to be choked. There is no proper hospital, and the sick are kept in an insufficiently ventilated and too small a room.

The latrine was as clean as water could make it, but from there being much plaster used in its construction it was offensive. The earthern jars used as urinals at night were offensive, but to lessen their liability to become so, the order was at once given by the judge to coat them with pitch.

The gaol was clean, but the ground immediately beyond its surrounding fence was foul. The prickly pear round the gaol and civil hospital might advantageously be replaced by milk bush. There is an enclosure south of the gaol that formerly was used as a latrine for the prisoners; it is no longer required for them, and it has become the resort of others for vile purposes. The burial-ground of the gaol is beside the enclosure just mentioned, and is unfenced. It is much too near to habitations to be safe, should a fatal epidemic disease occasion many interments to be made in it.

The municipality has no register of burial or burning places. The Moosulman grave-yards are mostly on the south of the city, beside the great tank, and there is one between the cantonment and the judge's house. The Hindoos bury their dead on the north, and their burning place is about half a mile beyond the town, at the Balaee che Ora, a water course in which there is the little water sufficient for their religious requirements.

The deaths have for a long time past been registered, but on inquiry it is found that only those that occur within the wall are with any certainty obtained. No dead body is allowed to be carried out of the gates of the town without a note of the circumstance being made. The deaths occurring outside of the wall are recorded by the persons at the gates when the information is brought to them by the friends of the deceased; but it is not obligatory for them to bring it, and there is but little reason to suppose that they often proffer it.

The municipal annual revenue is stated to be from 28,000 to 30,000 rupees. It is raised by an impost on all articles of consumption entering or leaving, with the exception of salt, wood, yarn, and cotton. A house-tax has been initiated in the newly laid out building ground in Nuwa Peth, where the only stipulations made are that each house shall be built in line with its neighbours, and that a rupee a year shall be paid for it to the municipal fund.

Besides the impost for the benefit of the municipality, it is said that a tax is levied for the temple of Sideshwur; this matter it is expected will be inquired into by the magistrate of the sub-collectorate.

For the sanitary improvement of the town of Sholapoor, it is recommended to the municipality as follows:—

1. That advantage be taken of every opportunity that offers to improve and widen the streets until they allow of the easy passage of wheeled vehicles.

2. That measures be at once taken to make straight main thoroughfares, about 40 feet wide, that will completely traverse the town between its opposite gates; as, for instance, from Daree Ves to Nuwa Ves, from Koombar Ves to Dehgaon Ves, from Panee Ves to Balaee Ves.

3. That straight metalled and guttered roads be made in Gooroowar, Baboo, Somwar and Sunwar Peth.

4. That a latrine for males, and one for females, be erected on one of the banks of the Lenkee or water-course that passes between Padsha and Sakur Peth, and north-east of the gaol garden. It should be from 300 to 350 yards distant from the public road leading from the cantonment to the judge's house, and about the same distance from the civil hospital. This situation appears the best with reference to the wants of the poor people, as it is nearly equidistant from the existing latrines in Sideshwur Peth and those near Koombar Ves. The design of it should differ from that of the latrines already built, by the recess under the seat being wider (about 15 inches), with a horizontal rest for a receiving vessel about a foot deep, of metal or of strong pottery, made to pass entirely under the seat, and fit its niche or recess in such a way as to preclude foul fluid from escaping over its sides.

5. The present latrines should be improved according to the plan given above, and thus offensive odours from them would be lessened, and their cesspits would be no longer required.

6. Dry fine earth should be laid in the recess before placing the receiving vessels, and should be renewed every day.

7. The

7. The sweepers' carts should have water-tight tanks, and one or more of them should always be available beside each public latrine, for the reception of night-soil brought from private residences.

8. A contract should, if possible, be made with cultivators to take the latrine filth as manure, but not to be used within the distance of a mile from the town.

9. A place for the deposit of filth should be provided at the distance of at least a mile from the town. As, on account of the military cantonment, such a deposit cannot be made in a southern or south-eastern direction, and as the east is occupied by part of the civil lines, while from that quarter, and from the north-east, the wind blows during a great part of the year, it appears that the north is, in this particular case, the least objectionable position.

At the prescribed place alone should all filth, not taken by the cultivators or brick-makers, be deposited.

10. When there are practicable roads through the town, tank night-soil carts should be sent their regular rounds every night to receive from private dwellings.

There are no facilities for systematic house-drainage, and as liquid refuse has to be disposed of, a choice may be made from among the expedients now in familiar use, of that which is least objectionable. The sunk vessel, which can be carried away to be emptied, seems the preferable plan; it can be more easily and effectually emptied than a masonry cesspit, from which the contents have to be baled out. The jars should however not be porous.

11. The jars used in place of cesspits should be glazed or coated with pitch.

12. No kind of cesspit should be allowed in or at the side of a public road.

13. No mere pit in the earth, or absorbent cesspit, should be allowed anywhere within the town or its suburbs.

14. No foul liquid should be permitted to be thrown on the streets, or on any ground within the town. The lenkee, or water-course, on the east of the town, should have its bed smoothed, and have a narrow masonry central gutter, or cunette, of carefully laid gradient, to carry off the water in the direction of its natural outlet.

15. No privy should be allowed without a stone pavement under its seat, and a receiving vessel of metal or earthenware.

16. In granting building sites, there should be added to the other conditions the stipulation, that there shall be sufficient and properly placed privy accommodation for the inhabitants of the houses.

17. The slaughtering of animals should be prohibited within the walls, and it should be restricted to a place north of the town.

18. Dyers' work-places should be allowed only north of the town.

19. Tanneries should be removed to at least a mile north of the town.

20. Potteries should be removed to the same locality.

21. Brick-kilns also should, when practicable, be removed to the locality proposed for the tanneries. Should ownership of the land be urged by those in Sideshwur Peth against removing, then their supply of street sweepings from the town should be stopped by the municipality as long as the kiln owners retain their present place of manufacture.

22. Distilleries should be removed to at least a mile north of the town.

23. The keepers of cattle should be required to maintain cleanliness in their premises.

24. The Commissioners should on all opportunities make their fellow townsmen aware of the great advantage that accrues to health from abundance of pure air, and should advise them, and especially those about to build, to substitute large windows in their rooms for the small openings, or loopholes, that are now common.

25. Three, or more, intelligent men should be employed to visit, at short intervals, the premises in their appointed beats, both within and beyond the walls, and to bring to notice any discovered nuisance, that it may be stopped or removed.

26. It is desirable that the district police continue to guard the Sideshwur tank, to prevent bathing and washing in it.

27. That efficient measures be taken, on a scale commensurate with the magnitude of the work, to cleanse the Sideshwur tank of the mud and silt that are accumulated in it.

28. That a catchpool be made where its feeding trench enters it, to prevent fresh silt from being carried in.

 29. That

29. That to improve the present washing troughs small screen walls be built, behind which persons may bathe.

30. That at the stairs, or ghat, of this tank there be wooden rails, over which persons may draw water without standing in it with dirty feet. The rails should be made moveable, so that as the water recedes they may be placed a step lower.

31. That in co-operation with the military authorities, steps be taken to improve the condition of the fort ditch.

32. And to fenee the side of the ditch nearest the town.

33. That by giving a proper direction to the operations of those quarrying for stone or gravel, in Khundoba Tulao, its reservoir for water be improved.

34. That the ground about that tank, and over which it is fed, be preserved clean.

35. That washing-places, similar to those at the Sideshwur tank, and with their drainage flowing away from the tank, be provided on the outer slope of its banks, and that bathing and washing in the tank itself be prohibited.

36. That no new burial place be allowed on the south or east of the town, that is, between the cantonment or the civil lines and the town.

37. That, if possible, objectionable burial-grounds be now closed.

38. That all burial-grounds, and places for burning the dead, which it is necessary to allow, be strictly defined and be registered.

39. That no burial or cremation be allowed in other than registered ground.

It is recommended to Government in the Revenue and Police Department—

40. That the present unwholesome gaol used by the police fouzdar be relinquished, and one that is unobjectionable, in a sanitary point of view, be provided. That while it is found unavoidably necessary to use the present jail, the occupation of each of its wards be restricted to, at most, four prisoners. A large ventilating grating should be made at the foot of each door, and there should be two large roof ventilators provided; these latter might be on McKinnell's plan, which has a combined inlet and outlet shaft, and each part of the shaft should have a sectional area of one foot.

41. That the sale of clay from the bed of the Sideshwur tank, at the annual auction, be coupled with the condition that it shall not be used for making pottery or bricks within the town limits, or elsewhere than at the place appointed by the municipality for such work.

42. That the brick-kiln, lately established beside the gaol burial-ground, be suppressed. It is thought that the magistrate of the sub-collectorate has already given orders for its removal.

In the Judicial Department it is recommended—

43. That in the district or zilla gaol never more than one person be shut up in one of the present small cells.

44. That a proper hospital ward be provided for the sick.

45. That the drains be always kept clear.

46. That the high milk-bush fence of the former gaol latrine be removed.

47. That milk-bush be substituted for prickly pear as a fence to the gaol.

48. That a burial-ground for the gaol be found to the north of the city, instead of in its present situation.

To Government in the Military Department it is recommended—

49. That, in co-operation with the municipality of Sholapoor, the margin of the fort ditch beside the town be fenced, for the safety of passengers. This subject has already been under discussion.

50. That the ditch of the fort be improved, as in its present condition it is detrimental to health. To fill it up entirely, or to excavate it, so that its bottom shall always be under water, would be effectual in stopping the evil it now causes, but the expense attending either plan would be very great. It is thought that it would be sufficient for its improvement were part of it deepened, and with the excavated material were the remainder of it filled up, so that there should at no time be any partially flooded or swampy part left in its bed. As the town would benefit by the improvement of this ditch, part of the expense should be borne by the municipality.

A. H. Leith, M. D.,
Deputy Inspector General of Hospitals,
President, Sanitary Commission.

Poona, 19 January 1865.

REPORT on the Sanitary Condition of the TOWN of AHMEDNUGGUR.

(Inspected in September 1865.)

Ahmednuggur, the chief town of the collectorate of the same name, is in north latitude 19° 6′ and east longitude 74° 48′, at 126 miles from the sea, and 1,900 feet above its level, and has a mean temperature of 77° Fahr. It is on the north bank of the river Seena, near its origin, and on the main road from Poona to Aurungabad, at a distance of 70 miles from the former place, and 65 in direct line south-west by south from the latter. The country around is undulating, and is closed in on the north and east, at a distance of four to six miles, by ranges of hills 500 or 600 feet high.

The trap, which is the rock of the district, has almost exclusively quartz and agate as the contained minerals of its surface beds, close to the town and in the tract extending to the hills due east of it. In some places where the rock is disintegrated, there is concretionary lime or kunkur, which is quarried to be burnt in the kiln, for use as building mortar.

The town stands on high ground, which has a hard and, here and there, a rocky surface, and which has a gentle declivity westward to the river. It is of an irregular somewhat oval shape, enclosed with a wall about 12 feet high and three miles in circuit. The wall has its base of stone, and its upper part of clay, and it has many small round bastions, but it is of little strength. There are nine gates in use.

The surface included within the wall is nearly 368 acres. The northern or higher part of the ground is almost all fully built on, but the western and south-western parts are less occupied by houses, and there are some gardens in them.

The town is not divided into regularly defined sections, but there are several districts that are inhabited by cultivators, and that are called after the villages to which their fields belong, such are Nalegaon, Morchoodanugur, Bagrooza, and Maleewara. Other parts of the town are often called after the chief streets or alee that pass through them, while some have the designation of poora, as Surjapoora, Kumalpoora, Atumpoora. These divisions are not used for municipal or police purposes, and are of use only to indicate localities of residence in the absence of names to many of the streets and lanes.

There are about eight miles of the streets metalled, and some of these made roads are of considerable width and length. The streets, however, are mostly unmetalled, narrow, and tortuous, or short, and although they have a general east and west and north and south direction, their crookedness prevents the free ventilation they might otherwise have from the prevailing winds.

The results of Observations on the Direction of the Wind that are said to have been made Morning and Evening during the Three Years 1862 to 1864, at the Civil Hospital, show the Number of Days that it blew from the—

	North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.
	Days.	*Days.*	*Days.*	*Days.*	*Days.*	*Days.*	*Days.*	*Days.*
January - -	1·0	9·7	·9	1·6	·7	2·8	1·6	12·7
February - -	9·7	3·5	–	1·9	–	2·8	·2	18·9
March - -	–	3·8	1·3	1·7	–	2·7	2·2	19·3
April - - -	1·2	6·2	·2	4·8	·5	1·3	·5	15·3
May - - -	·2	5·5	–	2·1	–	·5	·2	22·5
June - - -	·3	1·3	–	1·0	–	12·3	2·9	12·2
July - - -	–	–	–	·3	–	10·9	4·3	15·5
August - -	–	–	–	–	–	16·5	8·5	6·0
September - -	·2	0·5	–	1·0	–	11·5	3·3	13·5
October - -	2·3	2·2	2·2	2·5	–	2·8	·9	18·1
November - -	·5	8·2	–	6·1	·7	4·5	·8	9·2
December - -	2·0	22·7	·3	1·3	·5	1·5	·2	2·5
Year - - -	8·3	63·4	4·8	24·7	2·3	70·1	25·5	165·9

There are four or five streets with shops open towards the road, but with these exceptions the houses are in square enclosures with only an entrance door in the dead wall. There are a few substantial new houses, and a very few with upper floors, but most of those that are large and were well built, are now either ruinous or falling into decay, owing to the poverty of their present owners. Some of the dilapidated buildings retain the name of palace (mahal), that they had in the time of Moosulman prosperity. Most of the houses are mean mud huts, within square enclosures of mud wall, the rooms being built against the wall and leaving a small central court. The squares vary in size, and are placed without regularity, and as there has been little or no thought of roads for convenience of intercommunication or traffic when they were built, they form blind alleys and puzzling labyrinths.

With the exception of about an eighth that are tiled, all the houses have terraced roofs, and since the roofs, as well as the walls, are of mud, they are ill fitted to stand in heavy rain. Notwithstanding the occurrence of fatal accidents from time to time through the falling-in of roofs, the people will not use tiles, from a persuasion that they are unlucky.

In the more respectable streets the houses have privies, which, however, are generally nothing else than a screened portion of the court with a roof. Sweepers are rarely regular in their visits, but are called when the accumulation of filth is great. There is generally a little drain or gutter leading from the bathing place, and often it is joined by one from the privy, to convey foul liquids to a small pit where they are in part absorbed; sometimes an earthern jar is kept in the pit, and when it is full, a sweeper carries it away to empty it, or the contents are thrown on the public road. At the time of this inspection a man was seen in open day taking out the black fetid mud that had accumulated to an inconvenient extent in the pit in his court-yard, and throwing it on the road with an indifference on his own and his neighbours' parts, that showed that he was doing nothing uncommon. These sunken jars are often in the public road, as was seen also at Sholapoor, and receive the sewage through an aperture in the wall.

Most of the made roads in the city have side gutters formed between the kerbstone and the foundation of the house, and with a rough flat bottom. In some of the streets, instead of the footpaths for passengers that there is in other towns, there are masonry benches along the walls of the houses a foot and a half or two feet high, for the owners of the houses to sit on, and the side gutter, in such cases, passes under the bench and is covered, elsewhere it is open. Where these gutters are available, the sunken jar is not used. Except when it rains, all the fluid that is received by the drains, where uncovered, is absorbed into the ground or the foundations of the houses, and even on the occurrence of rain all is not always washed away. It had rained heavily immediately before this visit to the town, yet either from imperfection in the gradients, or choking of the drains, offensively foul accumulations were seen at several places where the slabs over the covered gutters were removed. The poorer of the inhabitants, such as resided in Topkhana, and the cultivators living in Nalegaon and Murchoodanugur, resorted for the vilest purposes to deserted enclosures and even to the roads. Those districts were very unclean, as may be imagined when such practices were allowed, while there was not even one sweeper in the service of the municipality.

The fall of the surface is to a nulla on the west of the town outside the wall and to the Seena on the south, and there are three main drains to carry off the storm waters in those directions. The surface of the town is far from being efficiently drained. There are many places where after rain the water was seen to remain in pools. In the south part of the city there are several hollows, in which houses are built that are much below the level of the road, and from which the storm water has not sufficient way of escape.

The yearly rainfall, as obtained from a mean of the observations made at the civil hospital in the middle of the town, and at the police hospital outside the wall, during the eleven years 1854 to 1864, is 25·68 inches; the maximum was 38·57 in 1861, and the minimum 16·46 inches in the year 1855.

The monthly fall in the same series of years:—

—	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Mean of 11 years -	·20	·05	·19	·25	1·79	5·30	1·86	3·89	6·37	4·94	·50	·34

The greatest fall in any month in the eleven years, was 10·56 inches.

It is thus seen that usually more or less rain falls in every month of the year, and that in September the greatest amount falls, and then in diminishing order in June, October, August, July, and May. In the other months the fall does not reach an inch in quantity.

The municipality maintains an establishment with carts for removing refuse from the roads, and it has several depôts for the street sweepings or litter, which it sells for manure. Most of these depôts are within the walls; one was seen in Topkhana, and it was most evidently a place where the filth of privies was usually thrown. There was a very large depôt at Maleewara.

Between the Surjapoor gate and Bagurputta, where weavers live, there are lime-kilns in a lane close to their owners' houses.

The chief bazar is the Gunj in the middle of the city; it is a large square which has its area in great part filled with buildings. The others are in streets; they are Artia che koot where goor and ghee are sold. The Deouree Bazar for cloth; the Joona Bazar in which the shops are in houses without verandahs, and make no show. The houses in this street have but the ground floor, some have the tower-like elevation on the top, which is called Sujja at Pundhurpoor, but is here called Jeena. The Dal Mundaee

is

is a wide street where grain is sold by those who bring it from the surrounding country in their carts, which they range along the sides of the road.

The Mungul Mundaee is a weekly market named from the day of the week on which it is held, the market-place is a square, planted with trees, besides Khundukpoora and Niamut Khan Mahal. The ground is low, and water forms pools on it after rain.

The municipality has lately got possession of a garden, which it has made a place of public recreation. It is near the Mungul Mundaee. The sale of the vegetables and fruit produced in it defrays the expenses of maintaining it.

All the judicial, magisterial, revenue, and police offices are in the town; also the criminal and debtors' gaols, the civil hospital and dispensary, and the Government schools. Besides these there are mission schools. The official residence of the collector of the zilla is also within the wall.

The municipal limits are nearly circumscribed by the city wall; there can hardly be said to be a suburb of the town. The only dwellings that can be so considered are those of Mharwara, close outside the Maleewara gate, near to where is seen, built into the wall, the memorial tablet to the officers and men of the 78th Highlanders, who were killed in the year 1803 at the taking of the town.

There is indeed another suburb, the Mundaee, between the Bhuwa Bungala and the Jaeenda gates, which once belonged to the town, but now it is within the military cantonment that envelopes the east and half of the north of the city.

On the north of the city there are the lines of the district police, and gardens. On the west, or windward, there is a nulla to which the neighbouring inhabitants resort as to a latrine, and the strictness of the police of the cantonment on the other side seems to occasion a concentration of nuisances in this narrow ravine, that is bounded on one side by the wall, and on the other by a high prickly pear hedge that encloses the gardens lying farther west. On the bank of the river, between the point where this nulla joins it and the Neptee gate, is the burial-place. It is of small extent and when seen at this visit, the ground was swampy; it is to the windward, and close to the wall. The brick-kilns are also close to the wall and near the burial-ground. There have been no burials within the town since the year 1857, when they were summarily stopped by the magistrate.

The ground lying outside the town, near the Maleewara gate, is cultivated, and was bearing a crop of bajree.

The inhabitants are supplied with drinking water brought by underground masonry conduits from neighbouring hills, and distributed in numerous cisterns in different parts of the town. The river, from being near its sources in the hills, is subject to sudden floods of short duration, and during these it is of formidable size. In the hot months it ceases to flow. The conduits never fail, although the quantity they convey becomes scanty at the end of the hot season. Wells afford but brackish water, not only in the town, as might be expected, but in the immediately surrounding country.

Ahmednuggur and its fort and its suburbs were formerly more abundantly provided with water than now. Seven aqueducts contributed the supply from various directions, and from distances of from four to six miles. They were the Kapoorwara, the Wurgaon, and the Nimbgaon for the city, the Shapoor and the Nazabye to the fort, and Bhingar and Shendee to the Furia and Bihist Bagh. The Shapoor aqueduct is now being restored for the use of the cantonment. The Bhingar conduit still flows, and it supplies the European troops. The Kapoorwara and the Wurgaon aqueducts are the only others besides the Bhingar that remain unchoked. A survey and estimate for the repair of the Nimbgaon conduit are being made for the municipality. The Kapoorwara aqueduct, after giving water in the lines of the native infantry regiment in the cantonment, supplies seven cisterns in the town The Wurgaon Nul, besides supplying the two gaols, gives water to 23 cisterns, either public ones, or private ones, to which the public are allowed free access. The cisterns most recently constructed by the municipality are two for Mhangs and two for Mhars, near the Delhi and Topkhana gates.

The number of houses has lately been accurately ascertained, and each has its number painted on it; they amount to 5,398, of which 109 are Government buildings, dhurmsala, musjeed, and temples. Of the others 4,096 are occupied by Hindoos, 1,152 by Moosulmans, and 41 by other races. This will give a population of nearly 31,734, if it be assumed that a family may be reckoned at six persons. That number would have only 56 square yards each of standing ground, but the little height to which the houses are raised, and the supply there is of good water, tend to mitigate in some measure the many disadvantages to which, as the preceding description renders it apparent, the inhabitants are exposed.

There has been a municipal commission since 1855, and it is now guided by the rules that are in general use with municipalities in this Presidency.

The revenue up to this time has been obtained by octroi levied on grain, cloth, and groceries, and the sale of street sweepings and litter. Last year it amounted to 7,000 rupees. Now the octroi has ceased, and a tax is to be levied on each house at a rate varying from 8 annas to 8 rupees a year. It is expected that between 10,000 and 11,000 rupees will be obtained by this tax.

RECOMMENDATIONS.

The municipal income has increased considerably in the last two or three years, but still it is small for the population when compared with the revenue of some other towns, and it is insufficient to defray the expense of carrying out, so rapidly as is to be desired, the improvements that are required. Other towns of the same or smaller size have a medical dispensary supported at least in part by the inhabitants, while Ahmednuggur contributes nothing to relieve the sickness of its poor, nor does it, as some municipalities do, employ a vaccinator. The vaccinator, at least, the town might support, while its works of sanitary improvement were being carried on, if the people were to agree to give as largely as some others do elsewhere.

Even were the octroi continued with the house tax, the burden would be but light, only about 9 annas a person, while there are towns that contribute at the average rate of a rupee.

1. I would recommend that the octroi should be again had recourse to, unless some better way of raising the revenue be devised. Also that the minor sources of income, such as a tax on bands of music, should not be neglected.

2. That a place outside the wall be found where the filth of the town may be deposited.

Owing to the town being circumscribed as it is, by the cantonment and the river and valuable garden ground, it is impossible to arrange in a perfectly satisfactory way for the filth depôts. Taking into account the direction of the prevailing winds, it is thought that the best spot is that which lies between the road to Poona and the river south south-west of the Maleewara gate.

3. That public latrines for males and also for females be erected between the Maleewara gate and the river; and also outside of the Topkhana gate for the convenience of those residing in the north end of the town.

4. That the walls of ruined huts and of deserted enclosures be removed, so that they may not give shelter to nuisances; and that the material be used in filling hollows and excavations.

5. That sweepers, with tank carts to receive night soil, be employed in different districts, and that they make regular rounds.

As this class of servants is but small, it would be an economical arrangement if the municipality were to organize and manage an establishment that would do the sweepers' work for the houses of all who would contribute to the fund kept for the purpose. By combination in this way the expense would be lessened, and many would be able to have the service that is so needful to health and comfort, but which is very expensive when arranged for by individual householders.

All-absorbent cesspits should be at once prohibited. The filth carts would provide the means of disposing of foul liquid refuse.

7. The discharging of the drainage of privies into the side gutters should be prohibited.

8. These gutters should be improved by lining them with stone to prevent their contents soaking into the foundations of the houses.

A simple gutter might be made by placing a stone slab in a sloping position, so that it would defend the wall of the house, and by joining the under edge of the kerbstone, would form a channel of which the section would be like a V.

9. When permission is given to build or rebuild a house, it should be required that a privy on a satisfactory plan be provided; the floor of the privy should in every case be paved with stone.

10. When leave is given to the poorer inhabitants to build huts, the ground should be marked out for them, so as to secure their being in line and having sufficient streets for ventilation and for thoroughfare.

The people should be induced to use tiles for roofing, as the interstices of a tiled roof secure a little ventilation, whereas with a terraced roof there will be none when the door is shut. The terraced roof of clay is, from experience, found to be unsafe in rainy weather.

11. The inclosing the huts in quadrangular courts is unwholesome, from its preventing ventilation, and should be discouraged.

12. When being at the expense of making permanent metalled roadways, every effort should be made to widen and make straight the now crooked and narrow lanes.

13. The Hindoo burial-place should be removed from its present situation at the windward of the town.

14. The brick kiln should be removed from its windward position.

15. When

15. When the arrangements that have been recommended have been carried out, the nulla to the west of the town need no longer be offensive, and the town wall may then be removed on the west and south sides, with great advantage to health, for the admission of the westerly breezes. At present its removal on that side is not to be recommended, as it shuts out, in some degree, the exhalations from the very foul ravine.

It is not thought that it would be expedient to remove the eastern part of the wall, which now forms a boundary between the cantonment and the town.

16. The lime burners should not be allowed to carry on their trade within the wall.

17. The streets and lanes should all be named.

18. It is well that the town is provided with water at all seasons, and that great privation from scantiness of the supply is not known. Yet it remains to be desired that not only should the inhabitants have abundance at all seasons to drink, but that they should also have a supply to enable all to enjoy the healthfulness and comfort of cleanliness. The desire that is manifested by the municipal commission to increase the present supply, should act as an incentive to increase the pecuniary means of effecting it.

In determining which aqueduct should be restored, it should be borne in mind that more general advantage would be derived from a delivery at the high north end of the city than at the lower level of the west or south ends.

Whether, in this view, the Nimbgaon, Neptee, or the Shendee, or the Nazabye conduit should have the preference, can only be determined after a survey of the courses of those aqueducts has been made.

A. H. Leith.

REPORT on the VILLAGE of BHINGAR.

(Inspected on 21 September 1865.)

PRESENT:

A. H. Leith, M. D., President.
Colonel H. W. B. Bell, Royal Engineers, Member.
Surgeon T. B. Beatty, M. D., Member and Secretary.

WITH reference to Government Resolution, No. 2030 of 1865, and accompaniments of Memorandum of 3rd September 1865, relative to the dangerous proximity of Bhingar to the European cavalry and artillery barracks at Ahmednuggur, it was considered necessary that the Sanitary Commission should visit Ahmednuggur and personally examine the village of Bhingar and obtain such further information regarding it as might be available.

This visit has been made, and I have the honour to submit to his Excellency the Governor in Council the recommendations that have been judged necessary after viewing the place and considering the documents before the commission.

Bhingar, which is on the side of a large nulla that flows westward through the cantonment, lies close to the lines that marks the military limits. It is about eleven furlongs to the eastward of the native infantry lines and the city, which are close together. It is half a mile to the north-eastward of the nearest part of the barracks occupied by the European cavalry and artillery, and three furlongs from their married men's quarters; but it is nearly continuous with the Sudur Bazar, that almost fills up the interval between those quarters and the village. The European cavalry and artillery barracks are a mile to the southward of the city and the Native infantry lines.

Bhingar has for a long while been complained of by the medical officers of the brigade and by the military authorities on account of its filthiness and its affording shelter to prostitutes and others of bad character, to the hurt of the troops. In the correspondence now under reference, it is particularly stated that the village is the source from which cholera is communicated to the cantonment.

That Bhingar is a place where cholera is fostered is probably true, but at the time of the epidemic prevalence of the disease in 1862, the Deputy Inspector General of Hospitals of the division, in his letter, No. 700 of 1862, in continuation of a report on the occurrences of cholera during the preceding 10 years, stated, after particular inquiries on the subject having been made, that there was "no information to be obtained relative to the priority of the attacks of cholera in the village or cantonment."

The course of the epidemic this year has been investigated, and from the returns obtained from all known available sources, it is seen that cholera was prevalent in the city and also in the cantonment bazar in April and the beginning of May, and that in the middle of May, which was the time of its increase in the artillery and cavalry lines, there was a simultaneous exacerbation of the disease in the city and in the Native infantry

depôt, a mile distant, as well as in the Sudur Bazar, close to the European married men's quarters. The official report of the mortality in Bhingar, which is almost continuous with the Sudur Bazar, states that there were no cholera deaths in the village until the 17th May, when 15 were recorded. Whether this record is absolutely correct or not so, cannot now be ascertained, but as the invasion of cholera usually begins with one or two cases, followed a day or two later by a greater number, the sudden occurrence of 15 deaths gives room to question the accuracy of the report. If the returns were correct, the inference would be, that the Sudur Bazar was the centre from which cholera radiated to Bhingar as well as to the European barracks.

The opinion that in letter No. 289 of 1865, from the major general commanding the division, is attributed to Brigadier General Birdwood, that all the cholera at Ahmednuggur "commenced at Bhingar, and that it is owing to this filthy place being so near to camp that the troops in camp are so often visited by it" may be correct, although the existing records do not substantiate it. It has been observed that filthy localities are liable to suffer severely when the disease is prevalent, and evidence of this was seen in the lines of the depôt of the 22nd Native Infantry during presence of cholera at Ahmednuggur this year.

There is no room to doubt that Bhingar is a filthy village; and it is indubitable that the close vicinity of a place so foul and so badly regulated as it is stated to be, is objectionable as regards health, and must be detrimental to the soldiers who have communication with it in a moral as well as a physical point of view.

The Sanitary Commission inspected the village on the 21st September, in company with the brigadier general and his staff, and the collector and magistrate of the zillah.

There was a considerable extent of metalled roads, which were found cleanly swept. These roads had side gutters, but they were in some places filled up with the accumulated mud, and in others foul water was stagnant. Excepting the bazars, where the houses were in line, the village was built most irregularly. Although there were some substantial houses, it chiefly consisted of square inclosures of various extent, with mud walls five or six feet and upwards in height. Among these there were narrow crooked lanes and blind alleys; and they, and the many ruins that existed, were seen to be receptacles of filth, and to be resorted to as latrines. There were several deposits of sweepings in the village that were said to have been stored there for sale, although the prospect of gain to the municipality from this source could be but small. Were the place of deposit away from the village, the filth would find as ready a market, while the impurity of the air breathed by the inhabitants would be lessened. There was a very large heap of foul sweepings stored as fuel at a brick kiln, which most objectionably adjoined the village on its east side. The fields or gardens which lie close to the north side of the village are enclosed with gigantic prickly pear hedges, which give cover to filth and impede ventilation. There are no public necessaries for the poor; and many of the inhabitants resort to the sides of a small hill that rises close to the east side of the village. Many of the poorer of the population of the Sudur Bazar are driven by the stringency of the cantonment rules, and the activity of its police, to add to the defilement of the neighbourhood of Bhingar, which the military at the same time say truly is most offensively foul. The cantonment native latrine that is nearest to the Sudur Bazar, is that which is used by the store Lascars, and, as it is a mile distant, it is of no use to the people of the bazar. At the south-east, but close to the village, there is a tannery.

Bhingar is supplied with good drinking water, brought by underground conduit from the hills a few miles distant.

The value of the land and houses of Bhingar has been estimated to be 4,01,715 rupees, yet the net revenue of the municipality for last year was only *Rs.* 747. 7. 10. The revenue is from a house tax varying from two annas to two rupees and a quarter on each house. In the year 1860–61 Government gave a grant of 400 rupees to make side gutters to the streets.

It has been proposed to relieve the cantonment of the present evils attendant on the neighbourhood of Bhingar, either by clearing it away, or by bringing it within cantonment limits and military rule.

For the reasons shown in the documents to which the Commission has been afforded access, it appears that both propositions are impracticable.

With a view to improve the sanitary condition of Bhingar, the municipality should be required—

1. To provide public latrines for men and for women; the first set to be on the rocky ground east of the village and north of the hill on the summit of which the old tomb stands. The latrine of Macfarlane, modified for Native use, and made to discharge into a tank cart, would be the best for the purpose. The soil should be removed to the fields south-eastward. Other latrines, north-east of the village, should subsequently be provided.

2. To provide and maintain a cart to collect the street sweepings daily, and to carry them from the village to a distant place of deposit in an easterly direction.

3. Then to inflict penalties on those committing nuisances within and around the village.

4. To

4. To remove the brick kiln to a spot as far to the eastward as possible.

5. To remove the tannery also in the same direction, to as great a distance as the village ground will admit of.

6. To exercise due control over the tannery, so as to diminish the nuisance which such a work place always occasions.

7. To remove the walls of all deserted inclosures and unoccupied ruinous houses, that they may no longer give cover to filth; and to fill up excavations in which pools form in the rains.

8. To permit the building or rebuilding of houses only when the approval of the municipality has been obtained.

9. To improve every opportunity that can be found for making straight and wide streets.

10. To remove the prickly pear fences in the neighbourhood of the village.

11. To devise ways of raising a yearly revenue adequate to provide the appliances and establishment necessary to keep the village clean and to carry out improvements in it.

Past experience has shown, that while without a constant magisterial supervision, cleanliness and order have not been maintained, and that in order to bring Bhingar into a condition that will be favourable to its own inhabitants, and will not endanger the health of the adjoining cantonment, it is desirable that it should have an European magistrate.

Although the law which can be applied for the suppression of nuisances in places out of military limits is less summarily efficacious than that which is at present in force in cantonments, yet great improvement in the condition of Bhingar might be effected were the law of the district stringently and steadily applied. This the collector says cannot be done by the assistant magistrate now in charge, because his presence is required elsewhere during a great part of the year. The magistrate of the collectorate has suggested that the cantonment magistrate, who already has the legal qualification, should be put in charge of Bhingar as a district in addition to his present cantonment duties. The brigadier general has agreed to this arrangement if it meets with the approval of Government. The cantonment magistrate would, by the existing law, thus be enabled to abate nuisances in Bhingar, to search for concealed liquor and prevent its illegal sale, and to exact security for the good behaviour of suspected persons. Owing to the necessity there would be for his conforming to the procedure of the district courts, he would have a considerable addition to his office work, and provision would require to be made for that.

The Sanitary Commission respectfully recommends to Government—

12. That the cantonment magistrate be put in charge of Bhingar, with such pecuniary allowance as his increased office duties may be thought to require.

13. As the present funds of the municipality are altogether inadequate to effect the improvements that are urgently needed, not only for the welfare of the village inhabitants, but for that of the neighbouring cantonment, the Commission suggests that the expense of at once clearing away all existing ruins and walls of unoccupied inclosures should be borne by Government. Also that the first latrines be provided by Government.

14. That latrines be provided to the eastward of the Sudur Bazar for those of its inhabitants who have no private conveniences, and who now are driven to defile the ground about Bhingar and elsewhere. The latrines should be of the kind recommended for that village.

15. That the further extension of the Sudur Bazar be prohibited.

16. That the isolation and the diminution of that bazar be persistently carried out by clearing away ruined and abandoned huts, and keeping the ground on which they stood unoccupied.

The distance of Bhingar from the European barracks is half a mile, and this distance would scarcely be sufficient to give the soldiers immunity from danger from a place liable to be so foul as it now is, even were the interval clear and unoccupied, but here, as in other instances that have lately been brought to the notice of Government, the Cantonment Bazar has been placed, most objectionably, between the barracks and the village, and has been allowed to extend so as nearly to efface the interval, by the location of a population now amounting to about 3,000, a number out of due proportion to so small a force. A great part of the bazar population has no necessary connection with the troops, and its presence is hurtful from increasing the liability to such diseases as are developed in densely congregated masses of men. The returns which have been quoted show that cholera was harboured in the Sudur Bazar for several weeks before it appeared in the barracks.

REPORT on the SANITARY CONDITION of PUNDHURPOOR.

(Inspected in January 1865.)

THE town of Pundhurpoor has importance, in a sanitary point of view, far beyond what the amount of its resident population could give it. It calls for attention on account of the vast numbers that flock to it at all times under circumstances that favour the generation of disease, and who, in again returning to their homes, scatter that disease in an epidemic form throughout the country.

The attraction at Pundhurpoor is the idol Vitoba, believed by the people to be an incarnation of Vishnoo that appeared at this place, and who in their legends is variously named Moorleedhur, Gopal, Vitul, and Krishna. This idol is the chief object of worship among the Murathas, and people of all castes visit it, and for many years pilgrims have come from far to see it. Now the speed and ease with which the journey can be made by railway has greatly increased the flow of devotees to Pundhurpoor, and many come even from Goozerat, and as the journey from Bombay and back, that in former days occupied a month or more, can now be performed with the aid of the railway in three or four days, there are many, both rich and poor, who perform it.

It is thought to be a meritorious thing to visit the idol at any time, but there are days on which the worship is considered to be of more than usual virtue. The Hindoos, who observe lunar time, divide the month into two parts, and number 14 days from the new moon, and again begin from full moon to count another period of 14 days. In each month there are two days devoted to Vitoba, the one is the 11th from the new moon, and the other the 11th from the full moon, and on those days the villagers within a distance of 10 or 12 miles come to Pundhurpoor to worship. There are two months in the year in which these 11th days are more pre-eminently sacred, and in which the pilgrims come from greater distances, and the religious observances in these months last for a fortnight, or from the 11th of the waxing to the 11th of waning moon. These months are Ashar, which falls partly or wholly in July, and Kartik, that falls partly or wholly in October.

My inspection of the town was in January, and I arrived on the morning after the ekadusee (11th). Many of the pilgrims had already departed, but there still were numerous groups of them studding the gravelly bed of the river for an extent of about two miles, or from the bend about half a mile above the town, to the Pondalik and the other temples that are in the river bed below the town. Most seemed to have lain under the sole canopy of the sky, while others had sheltered themselves with a (pal or) tent made of a sheet or blanket stretched over poles. Some were bathing or washing their clothes in the stream, others were eating or cooking their food, while many were preparing their ponies and pack-bullocks for their return home with their wives and children, who had been the companions of their pilgrimage. There was no place of privacy, and persons were seen openly defiling the bed of the river.

Pundhurpoor, in latitude 17° 41′, longitude 75° 24′, has lately been transferred from the Satara collectorate to the Sholapoor sub-collectorate of the Poona Zilla. It is 110 miles from Satara, 38 from Sholapoor, 157 miles from Ahmednuggur, and 119 miles from Poona, at all of which places there are military cantonments. From the last-mentioned station it may now be reached in a day, as the railroad passes, at Mohol, within about 24 miles of it.

There are no hills near, and the country around has a gently undulating surface, and is under cultivation. The town stands by the right bank of the Bheema river, which is here called the Chundrabhaga.

The river is serpentine, but where it passes the town its course is southward. The channel of the river is 330 yards wide, but it is only during part of the rainy season that it is full; and the ferry boat that plies on it is not required after November or the beginning of December. In January the stream was found to occupy only about a sixth of the channel, and it was easily fordable. The ford is, unfortunately, above the town.

The township land is cultivated, either as fields or gardens, close up to the town, and it is bounded at about three-quarters of a mile north, and in the direction of the village of Isbawee, by a watercourse, the Wundeea-cha Ora, in which there is a little water nearly all the year, and on the south, at the same distance, it is bounded by a much larger watercourse, over which the Beejapoor Road crosses by a bridge at Gopalpoor.

Gopalpoor is beyond the township limit on the south bank of the ora or watercourse; it is now an utterly deserted village, but with many of its houses still standing, although in a ruinous condition. The site is rocky, and is much higher than that of Pundhurpoor. The temple of Kala Gopal stands on the highest part of the ground, and is in good repair, and it is obligatory for the pilgrims at the great Jutra to visit it.

The cultivated ground beside the town is of black soil, excepting on the south, where, near the Gopalpoor bridge, there are some fields of a red sandy earth. On the west, beginning at the Pudmawuttee temple, about half a mile distant, there is a slightly elevated ridge of amygdaloidal trap and its gravel that extends for some distance along the Kasegaon road.

There is no lengthened series of accurate meteorological observations; all that is available

available is the register of the rainfall of the south-west monsoon kept at the office of the native revenue officer, the mamlutdar, and the results of observations during a complete year of the thermometer and the general direction of the wind, kept at the Charitable Dispensary. Rain may or may not have fallen in any of the months from December to May: it is not noted.

Monsoon Rainfall in Five Years.

Years.	June.	July.	August.	Sept.	October.	Nov.	Total.
1860 - - - -	12·12	1·91	1·60	7·76	1·26	–	24·65
1861 - - - -	3·16	2·23	10·27	3·83	1·42	–	20·91
1862 - - - -	5·20	0·56	1·98	14·66	6·74	0·61	29·39
1863 - - - -	2·50	4·68	3·48	3·87	2·54	–	16·62
1864 - - - -	7·11	1·34	6·30	5·44	–	–	20·19
Mean - - -	5·49	2·14	4·73	7·11	2·39	0·12	22·35

The Monthly Temperature noted during the Year 1864 was by Fahr. Thermometer.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Mean - - - - -	68	73	83	82	90	86	80	80	79	80	79	72	79
Maximum - - - -	74	76	90	96	96	90	83	83	82	81	82	76	96
Minimum - - - -	64	66	69	76	83	81	77	78	75	77	73	66	64

There was no gauge to aid in determining the direction of the wind, and the following results of the observations made cannot claim to be a very close approximation to the truth:—

Prevailing Direction of the Wind, Morning and Evening, during 1864.

——	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Morning	E.	W.	W.	N. E.	W.	S. W.	S. W.	S. W.	W.	S. E.	S. E.	W.
Evening	W.	S. E.	S. W.	W.	S. W.	S. W.	S. W.	S. W.	N. W.	S. W.	S. E.	W.

The town is not walled, but it is well defined in outline, and is closely built, except at its north end, beside the Satara Road, where the ground is not fully occupied.

It is likely that the nucleus of Pundhurpoor was built on surface rock or gravel similar to what is seen at a little distance to the west, as such is met with in wells. A great portion of the site of the present town is black soil. The central part of the town, which is somewhat more elevated than the rest, is on an eminence formed of the accumulated ruins of former houses. This was seen in a deep foundation that was being dug near the tirthee gate of the Temple of Vitoba, where the section showed the rubbish of old buildings; and there is now a descent of nine steps of more than ordinary depth to the court of the temple, which, from being paved and being constantly swept, has maintained its original level, while the surrounding ground has in the course of time grown in height. An inhabitant told me that he had seen a long forgotten temple uncovered in digging the foundation of a house.

Pundhurpoor occupies a belt of about two and a half furlongs broad and about a mile and a half long on the bank of the river. The streets, or as they may more appropriately be called, lanes and alleys, are numerous, irregular in direction, crooked, and narrow, most of them being only six or eight feet wide, and some were ascertained to be so narrow as three feet. They are mostly paved with stone, and almost all have a central covered drain. The stones are worn smooth and slippery, and afford very unsafe footing for horses, but the pavement is most excellent as regards health, and far preferable, under

the circumstances of the town, where the distances are so short, to macadamized roads, into which the abundant filth would soak, and be a source of hurtful exhalations. The stone prevents imbibition, and keeps the filth on the surface until cleared away by scavengers, or until it is at least so desiccated as to be comparatively but little hurtful.

There are some newly made macadamized roads with open side-gutters; these are wide enough for carts to pass, which is an advantage they have over the old lanes.

These new roads are undoubtedly useful, but it is not desirable that the macadamizing should become general. The chief of the metalled roads is one which passes round the town, including in its circle all the 12 temples, and is intended to make easy the performance of the ceremony of purdukshun, or circumambulation of the whole together, which is obligatory on pilgrims. The streets occupied by shops are also metalled, and wider than the generality of the lanes.

The houses on the western and northern outskirts of the town are mere mud huts in filthy enclosures. The middle of the town is more substantially built, and many of the houses are on plinths about two feet high, and have at least the lower 10 or 12 feet of their walls of cut stone or burnt brick and lime mortar; above that height most of them have less substantial material. They generally have one or two upper stories, and some have three, and all have terraced roofs. Nearly all are in dead-wall enclosures, without side windows or any opening to the street, excepting the door. The houses in the bazars are differently constructed, and have windows with wooden shutters but no glazed casements. Excepting in the bazar streets, the houses have a general similarity in arrangement. The street door gives entrance to a paved room, in which any cattle the family may have are kept, and in a corner of which the house privy, if there is one, is placed; the place is dark and offensive. The visitor is then led up a narrow stair to the upper rooms, which are small and low and badly lighted by means of a central shaft, called the chouk, that passes upwards from the foul ground-floor, and is from four to eight feet square, and is open to the sky at all seasons. The rooms on the different floors in the larger houses are arranged round the chouk like galleries, to benefit by its light. In the smaller houses it serves also the purpose of a chimney. The roof water falls through this shaft to the basement pavement, from which it passes by the house drain into the street sewer. The terraced roof is generally of clay, which is said to be sufficient to resist the rain, which falls lightly here. Besides the opening of the central shaft, many houses have small chimneys from the cooking-room rising through the roof. There is often a little turret, called sujja, eight or ten feet high, on the roof, and large enough at the top for one or two persons to sit and enjoy the cool breeze.

In the older parts of the town the privies as well as the bathing-places are drained into the street sewers, but the drains are mostly choked, and it is said the greater part of the inhabitants do not use privies. The total number of sweepers in Pundhurpoor is 15, and of these two are in the service of the municipality; this number is altogether unequal to the task of keeping the houses clean. In the metalled streets liquid refuse is drained into the open, badly made, side-gutters, there to be absorbed, or to evaporate if it be the dry season. Those who live near the side of the town resort to open spaces and to the fields, while those in the centre of the town, who have no convenience in their houses, frequent the public lanes and alleys, which in the morning are nearly unpassable to a stranger. As the day advances, however, they are cleaned by the pigs, which are seen here in almost incredible numbers. The municipality has gone to considerable expense in building a public latrine of a hundred seats, but it is not on a good plan, and as it is to the west or windward of the middle of the town, it is likely, if finished and used, to be the occasion of worse nuisance than even the present practices of the inhabitants. The numerous street sewers lead into six main drains that have their outlets at the river-side close to as many of the eight ghat, or flights of steps, leading down to its bed. It is in the rains only, when there is abundance of water, that these drains flow, and even then they now flow imperfectly, as they have not been cleared, it is said, for the last six years.

The Chundrabhaga is almost the sole source from which drinking water is taken. During the rains, when the river is flooded, the water is muddy, and requires subsidence to clear it: filtering is never practised here. After the rains have ceased, the stream is naturally clear, and would afford a wholesome supply if it were undefiled, but as there is no restraint whatever exercised, both the resident-population and the pilgrims bathe and wash in it, and they and their cattle otherwise defile it. When it is low, for several months before the rains, it is described as being most impure.

There are two public wells, the gift of charitable persons, but one only of them gives drinkable water. Among about 15 private wells there are five that give good water and to which the public are allowed access; three of these are outside the south end of the town near the Moosulman burial-ground, one opposite the middle of the town, near the temple of Vitoba, and another is at the north end, on the Isbawee road. The Pudmawuttee Tulao is the only tank, and it being in porous rock in an elevated situation, does not retain water after the rains.

According to the census of 1851, there were 2,100 houses and 14,000 resident inhabitants, or $6\frac{2}{3}$ to a house. There is no sign of there having been any considerable increase in the number of houses since that time. There is a large proportion of Brahmins in the town, the Budwaee families alone being estimated at about 1,000 persons. The numerous temples bring support to that caste.

There are 500 shops, by far the greater number being for the sale of food and condiments to the inhabitants and sojourners, which latter are estimated at about 4,000 or 5,000

5,000 at ordinary times, when there is no Jutra. It is most creditable that there is only one distillery and liquor shop, and but one ganja and one opium shop. There are persons carrying on all the trades required to meet the ordinary daily wants of the people. There are four brick-kilns and potteries, and ten lime-kilns. The only article that is produced here for external trade is kuree, or silk articles of dress stamped with gilt flowers and other patterns.

The pilgrim population fluctuates greatly according to the time of the month and of the year. The influx at the ordinary 11ths of the moon is estimated to be from 8,000 to 10,000, and at the Jutra, in the months of Ashar and Kartik, it is variously guessed to be from 50,000 to 100,000.

In the rains, when the river is high, the pilgrims have to find lodging or a place in the town in which to put up their pal; then especially, but at all seasons also, there is great overcrowding of the people. There are many Muth or temples with attached sheds, usually in quadrangular form, for the accommodation of strangers, and the municipality has since its incorporation in 1855 built six Dhurumsalas. Those places of shelter are useful to the strangers daily arriving, but they can give accommodation to only a very small portion of those that come at the great periodical concourse.

The Budwaee Brahmins, who inherit the revenue of the temple of Vitoba, increase their income by receiving lodgers of different castes into their houses, and at the great Jutra there is, from what has been learnt, great overcrowding and neglect of even ordinary cleanliness in their premises. They also hire out pal (or tents) to their constituents, for it is expected that a person who has once been a lodger with a Budwa will return to the same Budwa at all subsequent visits, and that all the members of his family will also do so. A register is kept of the lodgers and of the amount each presents to the idol, and when a pilgrim is short of money, and unable to give what is considered would be enough, he is entered in the book as debtor, and the debt is in due time recovered, either at a subsequent pilgrimage or by the Budwa coming to his village to receive it. From this it may be seen that it is to the pecuniary interest of these proprietors that the present unwholesome crowding of the town should not be interfered with.

In this small town there are 12 Hindoo temples, nearly all of which are large and expensively built, and have their numerous votaries. But the devotion to the idol Vitoba is so great, and attracts so great a number of worshippers, that all other temples than his are rendered comparatively insignificant. Vitoba's temple is in the middle of the town, and its premises, of considerable extent, are surrounded by high walls of cut stone, and beyond them by dwelling-houses.

The premises consist of two courts, the eastern, which is called the Subha Mundup, or place of meeting, is 150 feet long and 50 broad. Its paved court is comparatively but little encumbered, having only two small temples to Kala Marootee and Garood, and a peepul tree and a toolsee plant. It is quadrangular, and has on two sides a corridor about 15 feet wide, which was formerly open to all visitors, but which is now in parts partitioned. At the east end of Subha Mundup a colonnade intervenes between it and the eastern court. This eastern court would in any but a Hindoo country have some claim to be considered a Pantheon, as it has, besides the sacred peepul tree, 25 different idols, and two of these have each two temples.

The temples of Vitoba and Mahaluxmee stand in the middle of the court, and that of Rookmaee in a corner, while those of the other idols are in the corridors.

The chambers of the temple are called Gabhara, and those of Vitoba consist first of the idol chamber, in a pyramidal structure of modern Hindoo architecture. Its dimensions are 8 × 8 feet, and it has a domed roof about 30 feet high. The only openings besides the doorway are the pipe that carries the washings of the idol from the floor to a stone cistern outside, from which the devotees drink the foul liquid; the next is an opening $6\frac{1}{2}$ inches in diameter in the western wall, behind the idol, about eight feet from the floor; and on each side, at the same height, there is a hole scarcely four inches square. The stone image of Vitoba stands in the middle, and between it and the door there is a horizontal bar. Two lamps give light. The door is 5 × $2\frac{1}{2}$ feet.

The immediate ante-chamber into which the door of the idol's room opens is $8\frac{1}{4}$ × $5\frac{3}{4}$ feet and is $11\frac{1}{4}$ feet high. In its roof there is a ventilating opening about five inches square, the sides of which are blackened by the smoke of the lamps above-mentioned. The eastern door of this room is $5\frac{1}{4}$ × $2\frac{3}{4}$ feet, and it opens into the second ante-room called the Chaokambh, from the four pillars that support the roof. There is a door in its south side 4 × 2 feet, and opposite, in the north wall, there is a slab about 18 inches square with perforations. In the terraced roof there are four ventilating openings, each two feet square, and another 8 × 4 inches. By the perforated slab and these ventilating openings alone is light admitted when the plank door is shut. At its eastern side this room communicates with the third ante-chamber, called Solkambh, from the 16 pillars supporting its roof. The Solkambh is $40\frac{1}{2}$ feet long, $35\frac{3}{4}$ feet broad, and $10\frac{1}{2}$ feet high. Its western door opens into the colonnade of the Subha Mundup, and is the common entrance except at Jutra time. On the south there are two doors, and on the north three, and in the walls there are respectively three and two perforated slabs. The flat roofs of these rooms are continuous, and they have parapets.

There are the remains of frames of windsails that were erected over the ventilators some years since, with a view to throw down a current of air when the rooms were crowded.

A member of the temple committee stated that in former years the worshippers were admitted at Jutra, as well as other times, by the Namdeo gate of the Subha Mundup, and

that, to prevent the delay and consequent crushing that the worship called Spurshun occasions, it was ordered by royal authority that Durshun only, that is, obeisance at a distance, should be performed. Spurshun to Vitoba requires that the worshipper having made his Oolnaee, or wave offering, should touch with his hand the idol's foot, and then with his arms embrace the image. The crushing that takes place among the pilgrims in forcing their way through the crowd to the narrow entrance doors, and again in striving against it to get out, is very great, as there is no proper restriction to the numbers admitted at a time. It is said to be on record that, owing to robberies taking place in the crowd, it was ordered in 1849 by the resident at Satara, that a police should be maintained by the temple to ensure safety to the visitors.

It is said also to be on record, that in August 1848, in consequence of deaths from crushing in the Gabhara, an order was issued from Satara to regulate the doors by which the pilgrims should enter and go out. And in November 1856, the Mamlutdar having reported deaths from crushing, the authority at Satara gave orders that the doorways should be enlarged, and that a few only should be admitted at a time.

At the Jutra, the Budwaee, in order to prevent anyone passing in and out without having an opportunity of making the dukshina, or free-will offering, which is their perquisite, shut the usual entrance by the spacious Subha Mundup, and every other door except the Tirthee Gate, at the south-east corner. The doors of the Gabhara of Vitoba's temple are closed, and entrance is allowed only at the south door of the Chaokambh, or second ante-chamber, where one or more of the Budwaee stand inside to give preference to those whose offerings are most worthy; and, in keeping out the others who try to press in, the knotted handkerchief is so freely used that the phrase "toba chulta" is commonly used to convey the information that the door is being opened for the worshippers. The "toba" is a handkerchief twisted hard like a rope, and wetted to give it weight. The inner doors are in like manner guarded by the Budwaee, who have much arduous work in this way of realising their revenue. The door by which the worshipper is allowed to go out of the Gabhara is the most eastern one on the north side of the Solkambh room. The reason given for this arrangement is, that after having worshipped Vitoba, the pilgrim has to make his offering at the temple of Rookmaee, his wife, which is at the north-eastern corner of the court.

Before entering the Gabhara, the pilgrims who have entered the court by the Tirthee Gate, and who are said to amount to several thousands, are crowded in the narrow space about the temple of Mahaluxmee and between it and that of Vitoba, the total free area being only 449 square yards. Here the people have to stand or sit packed close together for many hours, some, the poor and the feeble, who are unable to force their way, may remain from morning to night fasting from obligation, or having eaten earth-nuts only, thirsty, heated, and fatigued by the struggle, and breathing an atmosphere polluted by the crowd, and by the filthiness naturally resulting from the long confinement of so many people unable to retire when requiring to do so. There are policemen on duty at the outside of the entrance door of the Gabhara, with instructions to let a few only enter at a time. From what I have learnt, the present arrangement is very ineffectual in preventing crowding inside the temple, where the police are not allowed to exercise authority. About 20, it is said, are allowed to enter at each time the Budwa inside opens the door; but the policeman does not know how many still remain in the temple, as exit is by a door on the other side. I have been informed by those who have full opportunities of knowing, and who have themselves passed through the ordeal of the "toba" and the crowd, that the crushing is so great that there is not room to move one's arms, and that the air is suffocating. The clothes are wet with perspiration, and by the time the idol chamber is reached, the devotees are bewildered and nearly unconscious, and so dazzled by the light there, after the darkness they have been in, that they can scarcely understand the instructions of the poojaree to present their offering. The lights are said to burn dimly, and not unfrequently to go out, and the native medical officer in charge of the dispensary informed me, that on holding a lighted torch over the ventilating opening of the first ante-chamber, he found it would not burn. When on the terraced roof of the Chaokambh room, at a time when only the ordinary daily numbers that frequent the temple were in it, and when the doors were not closed, as they are at the Jutra, the foul air that ascended through the ventilator was very offensive. The inner walls of the rooms become damp with the moisture exhaled by the crowd, and the idol also becomes wet, and the priest then says the god is fatigued.

After passing through the temple in the way that has just been related, the exhausted pilgrim returns, if he be rich enough, to a crowded lodging in the town, or to a tent, and if he be poor, he lies down without other shelter than his blanket or sheet, in the damp air of the river-bed, having drunk of its water that has been recklessly polluted. Owing to the fast, he cannot take cooked food; and out of the list of articles allowed to be eaten on the 11th of the moon, especially at Jutra time, the "bhooee-moong" (earth-nut) is what is most easily obtained, and of that he generally takes. He is thus greatly predisposed to sickness, and cholera, if present, finds a ready victim.

It has for many years been noticed that cholera frequently appears with virulence at the Pundhurpoor pilgrimage, and that it is subsequently spread over the country. Whether it be that the germs of the disease have, until the outbreak, been lying latent in the town, or whether they have been gathered to this focus by the many pilgrims converging to it from all quarters, is not known; but it is manifest that the seeds of the disease could scarcely find more favourable circumstances for their rapid development than they meet with at this place. The poison here concentrated acquires great intensity, and destroys many

many on the spot, while it is disseminated to towns and villages, near and far off, by the returning survivors of the pilgrims. The city of Poona and its neighbouring cantonments are particularly exposed to the danger of the disease being imported, from the custom observed of following up the pilgrimage to Vitoba by one to Dyanoba at Alundee, about 12 miles from Poona. It is not at every great Jutra that cholera appears; the disease was present in April 1864, while in Ashar and Kartik of that year it was absent.

It is the custom, as already stated, for the pilgrims to visit the temple of Kala Gopal at Gopalpoor on the 15th or last day of each of the great Jutra. This visit is attended with great license and revelry; caste is altogether ignored, and Koonbees, Brahmins, Mhars, and even lower out-castes, both men and women, join in the games and sports that their god Gopal (the same as Vitoba) is said to have enjoyed in his youth, and after dancing together under the suspended pot of curds, and smearing themselves and each other with the contents of the pot when it is broken, they all sup of it together. In the same court there is the temple of Junabaee, in a vault with a narrow staircase, and apparently no other means of ventilation. The concourse at Gopalpoor on this occasion is said to be immense.

In Pundhurpoor also the observances of caste are greatly relaxed. The touch of a Mhar or Bhungee, which in another place would oblige a Brahmin to lay aside his dress and bathe, and would render water he was carrying useless, is not here so polluting. After such a touch a Brahmin says, "It is Vitoba," and may be purified by mere sprinkling with water before he enters his house by another Brahmin, and the water he is carrying becomes at the same time fit for use.

The revenue of the temple of Vitoba is not exactly known, but it is estimated that 60,000 rupees are collected in dukshina by the Budwaee. The Government payment in cash is about 3,079 rupees, and the proceeds of a piece of land being added make the amount about 3,300 rupees a year. This sum is given to a committee, who spend it for the temple according to their discretion.

The burial-grounds are not numerous, but they are not sufficiently well regulated. In that of the Indoos, south of the town, human bones lie exposed. There is not sufficient care taken to register all deaths.

Since the year 1855 there has been a Municipal Commission in Pundhurpoor. It consists of eight resident members, four of whom hold Government office, and the other four are chosen from among the most respectable of the townsmen. They have a clerk on a monthly salary of 20 rupees, and an assistant clerk who gets 10 rupees a month. During the last year increased attention has been given to the duties of the commission, and it now has weekly meetings. The works that have been done are not very great as yet; the chief are the Purdukshun and some other roads, and six dhurumsalas or sheds for the shelter of travellers. The extensive latrine has before been mentioned.

The municipality contributes 550 rupees a year towards support of a charitable dispensary, the total expenses of which is 1,200 rupees. The remaining 650 rupees are derived from the rents of the village of Segaon, on the opposite bank of the river, made over by Government for this purpose. The dispensary is in charge of a sub-assistant surgeon, who is a zealous member of the municipality. The yearly income of the municipality is about 10,000 rupees, raised by a town tax on all articles of consumption, without exception, that are brought in on carts or animals, and that are not again exported within eight days without changing hands. A tax of one quarter-anna also is levied on every piece of wearing apparel, great or small, that is sold. There is no house tax or other impost.

The want of power to punish for nuisance, owing to the limitations of jurisdiction laid down in the penal code, was said to have been much felt. Now, however, that the Mamlutdar has been made a subordinate magistrate of the first class, he will, it is presumed, be able to try such cases.

The Mamlutdar has his office and court in a mere shed, on the sides of a central square space, and his only gaol is a portion of that shed enclosed with wooden bars, that give it little security, and but little seclusion for the prisoners, who have their *ennui* relieved throughout the day by seeing and hearing all that is going on. It is abundantly well ventilated through its railed front, but it has no other sanitary advantage or requisite whatever.

There is much in the condition of the town that one would wish to see improved, and much in relation to the temples and the worshippers that one would earnestly desire should be changed, but in which improvement by summary measures is impracticable. Although the pilgrimage and the idol worship at Pundhurpoor cannot on the one hand be suppressed, and on the other ought not in any way to be encouraged or promoted, yet humanity requires that the great danger to life, as well to the pilgrims themselves as to the resident inhabitants, and to the people of the towns and cantonments in the surrounding country, which, in the form of epidemic disease, attends or results from the pilgrimage and worship, should by all legitimate and practicable means be abated.

The town is unfavourably placed, being partly at least on a stiff retentive soil, and being on the margin of a river, a situation that is known to be favourable to the location of cholera. The condition of the town with its crowded, ill-ventilated dwellings, and their filthy premises, its choked drains and foul water, is such as to foster the disease.

The site of the town of course cannot be altered, but its condition may be improved, and with a view to this I would recommend that—

1. All lodging houses be placed under the control of the Municipal Commission, with a

view to the prevention of overcrowding and to the maintenance of ventilation and due cleanliness in them.

The Municipal Commission might in the first place be required to submit for approval or amendment their propositions regarding the numbers of inmates that rooms of certain dimensions should be allowed to contain, when well ventilated.

The enforcement of such a rule seems quite legitimate under Act XXVI. of 1850, one of the objects of which is the prevention of nuisances, as in the "Nuisance Removal Act for England," under Part II., relating to the removal of nuisances, proceedings are allowed to be taken to abate overcrowding.

I would also suggest—

2. That measures be immediately adopted by the municipality to bring clean drinking water into the town at all seasons.

It is thought that, at moderate expense, water might be pumped from an inlet tower or well that might be erected in the river, about three quarters of a mile above the town, and conveyed by iron pipes to cisterns for distribution.

3. That the choked drains be thoroughly cleaned, and thay be used for waste water only, not for night soil.

4. That two latrines of 60 seats each, one for males and the other for females, be erected between the south end of the town and the Hindoo burial ground, and that two others be built at the north end of the town near the river side and near the Satara road. Those situations appear the best that are available, both as regards the direction of the wind and convenience for the removal of the soil by cart to the fields. They might be constructed on the plan suggested lately to the Sholapoor Municipality. Water-tight tank carts should be used for the removal of the soil.

The latrine now being built to the windward of the town should be removed.

5. That the present pavement of the streets or lanes be not replaced by metalling, unless these lanes be made wide enough for commodious traffic with carts.

6. Potteries, and brick and lime-kilns, should be removed to a distance and to the south of the town. About half a mile above Gopalpoor, on the bank of the great nulla, would be an appropriate place for these works.

7. The prevention of the committing of filthy nuisances on the streets should be strictly attended to.

8. The burial and burning places should be registered, and no funerals should be permitted at unregistered places. And all burials and cremations should be carefully registered and tabulated, according to the forms that have been supplied through the revenue and police commissioner.

9. The police should guard the river opposite to and above the town from defilement. It would be impossible to prevent bathing and washing in the river, and it is not desirable to do so; but they should be allowed only at the south end of the town, below Pondalik temple.

The greatness of the number of those that congregate here at the Jutra, renders it impracticable to provide shelter for them. Their condition, however, during their stay might be improved, and with a view to this it is recommended:—

10. That a dry encamping ground be set apart for the pilgrims at Gopalpoor.

The ground there is hard, rocky, and gravelly, and it is high above the level of the river, yet close to it, so that water is obtainable without difficulty. It is only three quarters of a mile from Pundhurpoor, from which there is a made road.

Another spot has been thought of; it lies to the west, at about the same distance from the town, on the gravelly or rocky ridge that begins at Pudmawuttee temple. This spot could not be occupied at present, on account of the want of water, but were it required in addition to Gopalpoor, the watercourse running near it might be embanked so as to impond the water.

11. That a sufficiently large body of police be employed to prevent any one encamping in the river bed, the dampness of which is unwholesome, and especially so when cholera is near. And that thorough cleanliness be enforced by the police on the encamping ground.

12. That to promote the cleanliness of the camp, field latrines, in the form of narrow deep trenches, be dug in the earth at a short distance to the south of it, and that to these only the people of the camp be allowed to resort. That daily some of the earth that has been dug out of the trenches be thrown in to cover the soil there deposited.

From conversation with some of the leading Budwaee Brahmins, and from the opinions expressed by members of the Temple Commission, it is thought that there would be no objection to such alterations in the temple as are now to be proposed, seeing that they would not interfere with the Budwaee collecting the dukshina without loss.

13. It is proposed, in order to promote ventilation and to allow of the quick transit of the worshippers through the Gubhara of the temple, that the first antechamber, or that next to the idol's room, should have a doorway opened in its north wall and another in its south wall, each six feet high and two and a-half feet wide. That the south one be barred with iron as strongly as the Budwaee may wish, and that the northern one be furnished with

with a barred door to open and shut, and allow of the exit of the worshipper and save him from having to push his way back by the way he came, and through the entering crowd. Also, that instead of the present small aperture in the roof, a ventilating shaft two feet in diameter be inserted. This might be covered with a cowl, to prevent the admission of rain, and thus remove the only objection that was made to it by the Budwaee when at the visit it was proposed to them.

The opening of the doorways in the antechamber is not contrary to the Hindoo religion, as the question has been so decided on its being referred to Shastrees by one of the Temple Committee (or Punch), and at the time of this visit the neighbouring temple of Rookmaee was having the wall of its antechamber broken down to allow of the purdukshun or circumambulation of that temple.

14. That the present plank door on the south side of Chaokambh room be replaced with a barred door, and that opposite it, in the north side, a similar doorway and door be made.

That the present plank doors at the north and south sides of the Solkambh be replaced with barred doors.

15. That the Namdeo or eastern gate of the Subha Mundup be made the entrance at the Jutra, as it now is at other times, and that the Subha Mundup be given for the accommodation of the visitors.

16. Should any valid objection to throwing open the Subha Mundup be maintained, then most imperative orders should be given to the policemen on duty at the door of the Gabhara, not to admit more than 10 persons at a time, and not to allow of any fresh admission until assured that the 10 already admitted have gone out again. At present the policeman cannot know who have left the rooms, but as I fully ascertained on the spot, it may be arranged by two policemen being on the terraced roof, one on the parapet overlooking the door of exit at the north, to pass the word to the other policeman as to how many have gone out, the other man being at the south parapet to communicate the information to the policeman below at the door of entrance. By these arrangements the religious observances of the people would be in nowise interfered with, and the collecting of their perquisites by the Budwaee would only be rendered more easy.

To Government in the Revenue and Police Department, I beg leave to suggest:—

17. That an appropriate lock-up or gaol be substituted for the present one connected with the Mamlutdar's Court.

A. H. Leith, M.D.,
Deputy Inspector General of Hospitals,
President, Sanitary Commission.

Bombay 28 February 1865.

REPORT on the Sanitary Condition of NASIK.

(Inspected in October 1865.)

NASIK, in latitude 20° 0′ and longitude 73° 51′, has an elevation of about 1,830 feet above the sea level, and is 56 miles in a due east direction from the nearest point of the sea coast.

It is in the Admednugger Collectorate, at the distance of 88 miles N.N.W. from the town of the same name; and it is 103 miles north of Poona. The north-eastern branch of the Great Indian Peninsular Railway passes within four miles, at Deolalee, south of Nasik. The distance from Bombay by railway is 116 miles.

The country around Nasik is a plain with hills of rugged outline rising abruptly from it. There is a group of these hills, in which there are some cave temples, and among which the hill fort of Ramsej, seven miles distant, stands 1,460 feet above the plain. There is another group about six miles south-westward of the town, near Patordee, in which also there are rock-cut temples of Boodhist origin.

The flat-topped hill of Unjuneree, about 4,300 feet above the sea, is on the western horizon, at a distance of 14 miles. There is an abundance of water; some of the few European inhabitants of Nasik have bungalows on the hill, where they reside in the hot season on account of the refreshing coolness of the air. Unjuneree is on the way to Trimbuk, but there is no made road to either place, and the ascent of the hill is arduous.

The only rock in the district is trappean. The soil varies, but much of it is regur, or black soil, that is very retentive of moisture. The articles cultivated are cereals, chiefly bajree and wheat, pulse, oilseed, and tobacco; vegetables and grapes and other fruit are grown for the Bombay market.

The plain is traversed by the Godavery river, which is joined where it passes through the town, by the Wagudee from the left, and about a mile and a half below Nasik; another tributary, the Nasurdee, flows into it from the right. With the exception of the clumps about villages, and of a mile or a mile and a half of the south and south-

east of Nasik, where there are fields and gardens enclosed with hedges and shaded with mango, tamarind, and other trees, the country is open, and nearly bare of trees for many miles.

On the west of the town and very near it, there are old quarries in which foul water was seen to have collected, and beyond these the ground is irregular from the remains of former brick-kilns, which had very properly been removed from the windward of the city to the other side of the river and south of Punchwuttee. On the site of those former brick-kilns the gunpowder makers now have their works. Still further west on the open plain and about a mile from the city, there are the remains of temporary barracks that were occupied by a detachment of European infantry during the mutiny.

It is found from the register of thermometric observations kept at the Civil Hospital in the town, that the mean temperature during 14 years was 73½° Fahr. Although it is likely that the observations were not always carefully made, yet it may be presumed that in so long a series the errors of excess and deficiency have been mutually compensatory. It has not been ascertained whether there is or not any index error in the instrument. The mean temperature of the year deduced from the register is 3° below that of Poona, as recorded at the Cantonment Observatory in the last eight years, and the differences in the temperature of the months from October to March are still greater. In the months of June to August the temperature of Poona is somewhat less than that of Nasik.

RESULTS of Observations of the Temperature of the Air with Fahr. Therm. during 14 years (1851 to 1864) at the Civil Hospital, Nasik.

—	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Mean - -	62·3	68·3	73·8	80·9	83·6	81·6	76·6	75·6	74·7	72·1	68·6	63·5

There is nothing in the altitudes of the two places to account for their difference of temperature, as both are at nearly the same elevation above the sea, and their difference of latitude would account for barely half a degree. Although it is not apparent why the temperature at Nasik should be so much lower than at Poona in the colder months, there is a manifest cause in the positions of the two places with reference to the sea, why in the hotter months one should be cooler than the other. Nasik is a little nearer to the sea coast, and owing to a re-entering bend in the tortuous and broken outline of the western scarp of the Syhadree range, the north-west breeze has to pass over only 15 miles of intervening low hills and plain, and loses but little of its freshness ere it reaches the station, while the distance of Poona from the brow of the mountains overhanging the Konkun is nearly three times as great.

The average quantity of rain during 15 years has been 28·22 inches, and it has fluctuated from 17·26 to 34·96 inches. Were Nasik as near to the mountain scarp on the west and south-west as it is to the north westward, the rainfall would be heavier than it is, but westward there are high intercepting hills, and south-westwards, towards Egutpoor, although there is little but open plain, the distance is 26 miles, and the clouds forced up from the Konkun by the wind, have time in which to discharge their condensed moisture and to attain a yet higher elevation before they pass over Nasik.

MEAN Rain-fall in Inches registered at the Civil Hospital, Nasik, during the 15 years, 1850 to 1864.

—	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Mean of 15 years -	·02	·01	·08	·08	1·15	5·54	7·63	5·18	4·66	2·94	·63	·23

The average yearly fall of rain at Egutpoor (Vigutpoo) during the four S.W. monsoons in which it has been registered, may be compared in the following table with the rain-fall at Nasik during the same periods. The Mamlutdar's registrations are not continued through all the year, but only from June to November, and they only profess to give the amount of the south-west monsoon fall.

AVERAGE

AVERAGE RAIN-FALL of four S. W. Monsoons—1861 to 1864—at Vigutpoor (Egutpoor) and Nasik.

	June.	July.	August.	September.	October
Egutpoor - - - - - -	1·11	46·21	37·03	16·31	3·89
Nasik - - - - - - -	5·88	6·85	3·99	4·34	4·22

The quantity of rain that fell at Egutpoor, as shown by the table, was more than five times greater than what fell at Nasik.

The town occupies nearly a mile of the right bank of the river, where, in its serpentine course, it runs south-eastward between sloping hillocks. A part of the town, of about a seventh of its area, and called Punchwuttee, is on the left bank, on rising ground between the Aroona Nulla and the Wagudee River where they join the Godavery.

The town on the right bank consists of an older and a newer part, and there are three small hills or elevations on which it is built. The northern one is that on which the more modern part stands, and on which there is the old palace, now occupied as Government offices. The ground falls eastward, but it still has elevation enough to form a low bluff at Sarungputtee on the river side. The next elevation is in the middle of the town, and runs south from Tambut Alee and the Durga, and from the Tekh and Sonar Alee to Mooltanpoor. These two hills are separated by the Suruswuttee Nulla. The third hill is that on which there are the ruins of Joonee Gurhee or the old fort. Both this hill and the Tekh have an elevation of probably 60 to 80 feet above the river, and, in their precipitous cliffs on that side, show indisputably that artificial mounds had been added to the natural hills, on which it is likely fortifications were placed to command the river. There are still some remains of brick masonry visible on the face of the cliff. There is a ravine between the Tekh and Joonee Gurhee, and on the other side of the latter, the Nagjeera Nulla forms the lower boundary of the town.

The hilly surface on which Nasik is built may afford a reason why its streets and lanes are so irregular and crooked as they are. It may also be a reason why nearly all are paved, because with a fall so rapid as they generally have, any other than a paved surface would be worn by the strong current of the storm waters in the rains. Experience has proved this in the last south-west monsoon when the metalling of some steep roads, that as an intended improvement had been macadamized, was torn up and washed away. The metalling may be admissible where the roads have a gentle gradient and where they are wide enough for cart traffic, and where the traffic is very great, as it makes the transport easier; but in a sanitary aspect the pavement is by far preferable for the town roads, if it be well laid and kept in repair, because it prevents much of the soaking or imbibition of impurities into the subsoil, that a softer surface would admit. It was seen, however, that the pavement in nearly all the streets was in great disrepair.

The streets appear to be mostly from six to 10 or 12 feet wide, and the Bura Suruk and part of Tambut Alee are perhaps the only roads that are wider. The former is 18 feet wide. It is metalled and has open gutters, but they are formed solely with the kerbstones on one side and the foundation walls of the houses on the other, without any masonry inverts. These gutters are but open cesspits allowing foul liquids to soak into the foundations of the houses.

The city is not walled, but it has gates at the ends of the streets opening on the river side, such as the Ushra, Nao, Delhi, and Suttee gates, and towards the southern and western suburbs the Bhugooda, Trimbuk, and Mulhar gates.

Nearly all the houses have upper floors, and some have more than one storey. They are on plinths two or three feet high, with often an open recess on the ground floor like a verandah. The houses are built in line, and are generally constructed of brick masonry end walls and wooden fronts. The floors of their upper rooms are always of plank, never of concrete or plaster. The people sleep on the floor, and a cot or bedstead is very rarely seen. They are well supplied with windows with wooden shutters; none have glazed casements. Most of the houses are roofed with coarsely made tiles.

The general appearance of the houses gives the impression of more comfort and affluence than is usually met with in the Dukhun, and many of them have their wood work highly ornamented with carving.

Beside the houses that have been thus described, there is a considerable number of the residences of Sirdars and men of property which are built on another plan. They consist of a square court, or chouk, that is entered by a door in a dead wall towards the street, or if there are windows, it is only in the upper floors that they are seen. The court has an open corridor on its four sides raised two or three feet above the central ground or pavement, at one side of which the household idol may be placed. On the upper floor there is an open gallery corresponding with the lower corridor. The dwelling apartments open into the gallery or corridor. There is sometimes a second square communicating with the first. Notwithstanding the outward appearance of the houses, it is said that there is much

poverty in the town, and that many mansions are falling into decay, because the owners have not the means of keeping them in repair.

In the older part of the city the eye is but seldom offended in the streets as it is at Poona and Sholapoor and Ahmednuggur, nor is the aid of pigs required as at Pundhurpoor. This part of Nasik has a system of house drainage. Nearly every house has its privy, and this, as well as the bathing place, has communication with the drain that is under the centre of every street and lane. What is offensive is thus kept out of sight, and although it stagnates dangerously below the surface, it is better that it should do so than that it should stagnate still more hurtfully in open gutters. The drains are roughly constructed, and the supply of water for household purposes is so scanty, that they are never flushed, unless where from the imperfection of their covering, the water during heavy rains finds free entrance. From obstruction or from fault in the gradient at a more than usually level part of its course, there is the liability to the filthy contents of the drain making their appearance through the interstices of the pavement after rain—this was witnessed at the inspection.

Although the streets contrasted favourably with those of some other towns, there was much filth found on inspection in the dwellings and the courts and recesses of the premises; there were heaps of refuse, and where cattle were kept the dung and litter were allowed to accumulate. Among other instances of this dereliction of cleanliness there was that of Rajah Buhadur Waree, rented by the mounted police. There was the court that is usually found in the old Sirdars' houses, having its central square open to the sky, and with its unpaved or but partially paved ground sunk two or three feet below the corridor floor. The corridors were occupied by the men's horses, with here and there accumulations of dung; and in order to allow of ready communication from one part of the court to another, as there were no steps in use, inclined planes were made of the foul litter. The men occupied the upper galleries that opened on this court as dormitories. It was said that inquiries were being made for a more appropriate place for those policemen and their horses. Filth was allowed to accumulate at nearly every gate or outlet of the city. This was the case at the Bhugooda gate, near which, in the Mahadeo and Tulaoree districts, there is a considerable suburban population living in miserable houses, in bad repair, with unmade roads, or lanes among high prickly pear and euphorbia hedges, and the bed of the Lenkee and the neighbouring ground outrageously defiled.

Near Tulaoree and opposite a Peerzada residence, there was a low lying swamp that had probably been a tank that had become silted up. Apparently no attempt had been made to drain the swamp. The base of Joonee-gurhee and the Tekh at Doorgaree were the common resort of the people around, who had no privies. Ushra gate was a particularly filthy place; close to a dense population the foulest refuse and soil were lying on the river side, and the premises of a ruinous house were continuing to be used as a latrine, although no sweeper ever visited it. Ooma Maheshwur and the Suttee gate also were places where refuse was allowed to be thrown out and to accumulate.

On the outskirts to the north-west, or windward of the town, there is a very unclean and miserable collection of hovels, called Garpooree, inhabited by Purwaree, and in that neighbourhood potters were carrying on their trade and causing great nuisance from using litter and sweepings as fuel.

The district of Punchwuttee, on the left bank of the Godavery, has several large temples, and it has a numerous Brahmin population. Its houses are mostly substantial and in good repair, but there are some old buildings that are falling into ruins. Raja Buhadur Dhurmsala was in this condition. It was rented by cowkeepers and others; the cattle occupied the corridors in one of the courts, and the unpaved, undrained central square was the receptacle of all kinds of impurities. The other square was even more foul, as all the filth that was thrown into it appeared to be left there, whereas from where the cattle were kept it was occasionally removed with the cowdung as manure. Behind this great building there was a space that was formerly a garden, but now the dunghill of the neighbourhood. Behind the temple of Kala Ramchundur, in the middle of the district, the ground was covered with ordure. Beside Naroo Shunkur's temple of Mahadeo, or the Gunta temple, the ground was in a similar state, and the pools that remained after the recent rain, from inequalities of the surface, were very offensive. The bank of the Godavery, where the sacred stream was joined by the Wagudee, was so foul with odure, as to be almost impassable. There is no drainage in Punchwuttee.

The storm waters flow rapidly from the hilly ground on which the town on the right bank stands, but the declivities are too great for satisfactory drainage, at least along the present lines of road, owing to the force of the current being so great as to be destructive.

The present street drains form several systems that discharge by sewers into the river bed, either directly or indirectly through the Suruswuttee Nulla. The outlet of the sewers is at the side of the river bed, where the stream reaches the deposit only during floods. The natural fall of the ground has been the chief guide in constructing the present main drains, and they generally take the shortest course that the levels will allow to the river, or to the Suruswuttee. The Tekh drain has its outfall over the face of the cliff. The Ushragullee drain pours out its contents beside the gate of that name. At the Nao gate passes out the drainage of Mudlee Hoolee, Tewnda, Durga, Musooba, Tekh, Bhadur Kalee, and the eastern part of Tambut Alee. The sewer from Gondalee gullee and part of Poonakur gullee has its outfall at the Delhi gate. The neighbourhood of Gora Ramchunder temple and Sarungputtee and that of Ooma Maheshwur, and again that of Dangur Ootara have their separate drains into the Godavery bed. The sewage from

from the hospital and its vicinity passes by the Suttee gate. All these drains cause much evil in their course, from their imperfect construction, and at their outfalls on the river side; but these outlets are at one side, and to the leeward of the greater part of the city with reference to the prevailing wind. The evils attending them are therefore small compared with that of the drainage that falls into the Suruswuttee. This nulla is the natural channel by which the rain waters flow from the ground immediately west of the city and from the centre of the city itself. From where it enters the town at the Trimbuk gate, it has a northward course to the new palace, whence it runs eastwards for a short distance to the river; it is bridged at its bend, and the locality is from that called the (bridge or) pool. The nulla is deep and wide, and it has rocky and uneven bottom and sides. Its fall averages 1 in 45, so that in heavy rain the torrent must be powerful, and judging from its 16-feet wide mouth, the volume of water must be great. No large quantity of water can remain in the nulla, but pools are left in hollows in its uneven bed.

The Suruswuttee nulla receives the house drainage from Pinjar ghat, Helbaoree gullee, Hoondee gullee, Bembeepoor, and the western halves of Tambut Alee and Poonakur gullee, all one side, and from the streets in the neighbourhood of the old and new palaces on the other side. The houses on its margin have their privies so placed as to discharge the soil into it in a shameless way. What falls or is thrown into this foul receptacle remains there until it evaporates, or until heavy rain makes a torrent to wash it away; a reference to the table of rain-fall shows that during five months in the year there is no likelihood of there being a sufficient quantity of rain to flush it. Its condition, when visited even soon after heavy rain, was overpoweringly offensive, and it was said, by those who from experience could believe it possible, to be still worse at a later time of the year. The evil is of great magnitude and urgently requires to be remedied.

The river bed has an average breadth of 140 yards, but it is only for a short time during floods that it is full. In October the stream at the upper part of the town was divided into several channels that were separated by grassy and rocky shoals, and opposite the middle of the town it was contained within masonry embankments, built for the convenience of bathers. This built channel is 39 yards wide. The stream was again broader below that point and opposite Nao gate, but was easily fordable, having only about a foot depth of water. The drift left on the banks below the city, and the marks on the temples standing on the bed of the river, gave the means of ascertaining that the height to which the flood had recently risen was 19 feet above the present level. The drainage area that contributes to this great rise is between 290 and 300 square miles in extent, and the farthest source of the Godavery is at Hurshwaree, west of Trimbuk, and 20 miles from Nasik in direct line, or 32 miles along the course of the river. When the river is in flood, the ground-floors of the houses on its bank, between the Ushra and Delhi gates, are inundated. A ferry boat plies when the water is deep, but at other seasons the river can be easily forded, and two masonry dams give paths by which to cross during the greater part of the year. Last hot season, owing to the preceding monsoon rain having been scanty, the river ceased to flow, and there were but dirty stagnant pools in its bed.

There are several small temples built on the bed of the river, contributing much to the picturesque beauty of the scene, but the stream is more or less hurtfully obstructed by them, especially by Venkuteshwur temple near the Pool.

From the Pool to the Delhi gate there is a stone-paved terrace about 44 feet wide, in front of the houses that line the bank, and there is another terrace at a lower level, running 110 yards along the mid-channel, forming one of the embankments already mentioned as affording convenience to persons washing or bathing when the river is low. The ground between these terraces is depressed, and a backwater is formed on it, or rather what at the visit was a filthy, shallow pond, that received the sewage brought down by the Suruswuttee nulla; this pond had an area of 2,420 square yards. The assistant magistrate mentioned that he had determined to make a drain to divert the dry weather flow of sewage from entering it, but while it exists filth cannot be prevented from collecting in it.

The supply of water is deficient in quantity and bad in quality. The water of the river when not in flood is too impure to be drunk, and the wells, with few exceptions, do not give drinkable water. The Return at the Census of 1851 stated that there were in the township four tanks, all outside the town; 830 wells belonging to householders in the town, seven in the bazars, 55 in the suburbs, and 197 in the fields. Of those in the city and suburbs, from which the townspeople drew, only four yield water that is drunk throughout the year, and of these Helbaoree, within the Trimbuk gate, is relished probably only on account of its being connected with a sacred durga. The others that are reported to give good water are Soobadar baoree, south-west of the town beside Dhondoo Punt's Paga, Burdez baoree, also a well between the Joonee Gurhee and Nagjeera, and a small well near to and outside of Bhugooda gate. Some others yield water that is considered drinkable, for a short time after the rains, but which in the dry season becomes brackish. Of this number is the Bhudur Kalee well, the water of which was analysed in October 1855, and then had in a gallon 62·64 grains of solid impurity, of which 32·53 grains were nitrates. This source cannot have become less impure in the last 10 years, and there is little doubt that, with so abundant a supply of organic matter as has year after year been allowed to soak into the subsoil, from the imperfect drains, nitrates would on analysis be found to be abundant in all, while in some of those in lower ground than Bhudhur Kalee, these salts would be found present in even more abundance. The depth of some of the wells is great: the Sathpueree at the Top Mundaee, is named from its descent of 60 steps, and there is a well at the Durga, which, although 90 feet deep, was

dry even in October. The water of Helbaoree in the same month was 35 feet from the surface. The best water that the inhabitants have is brought by conduit from the Nasurdee river on the westward, a distance of about a mile and a-half, and is delivered by fountain beside Dhondoo Punt's Paga. This conduit, it is said, was constructed by Dhondoo Madadeo 60 or 70 years ago. It ceased to flow during several months of the year, until it was repaired recently at the expense of the Honourable the late Jugonnath Sunkurset. It is now expected to flow uninteruptedly through all the year. It is deservedly well appreciated by the people.

There are no proper market places. The Gunj, near the new palace, is the chief place resorted to by sellers, and they obstruct the thoroughfare by laying out their goods to view upon the ground. There is a place where grass is sold at Top Mundaee, and another at the north end of the town, at the Suttee gate. In the fair season, when the river is easily crossed, there is a market at Punchwuttee. The beef butchers slaughter and sell the meat at a place a little to the south of the town. The mutton butchers slaughter the animals at their own houses, near the south end of the Bura Suruk, where they have their shops; and in that locality, which is to the west and windward of the densest part of the town, there are tanneries.

The brass and copper ware vessels made at Nasik are much sought after, and many are said to be sold in the country around; and rice is sent in considerable quantity to Ahmednuggur, and fruit to Bombay; but there is no considerable outward trade except in these articles.

Nasik owed its former importance, and owes much of what it still has, to the faith the Brahminical Hindoos have in the sin-cleansing virtue of waters of the Godavery. Among the temples of Nasik, it is only that of Kala Ramchundur in Punchwuttee to which there is a periodical yearly Jutra. This Jutra takes place about April on Ram Naomee, celebrated as the birthday of Ramchundra, the seventh incarnation of Vishnoo. It is attended by from 5,000 to 6,000 persons, who come from distances not exceeding 30 or 40 miles. As it is in the hot weather, the pilgrims that do not find accommodation in the houses lie in the open air.

Nasik is a thoroughfare at all times of the year for the many pilgrims who visit Trimbuk, and it is visited by large numbers at the great Jutra, which is observed at that place every 12 years; the last period occurred in the year 1861.

The population was stated in the year 1826 to be about 30,000 persons, and probably correctly so, as it appears to have been greater in former times than it now is. The number, according to the census of 1851, was 21,860 persons, the females being a little in excess of the males, owing, it is said, to the fact that widows come here in considerable numbers to spend the remainder of their life. According to the same census, there were 3,687 houses, of which 3,505 were tiled. The enumeration of houses made lately with the greatest exactness, for the purpose of municipal assessment, showed the present number to be 3,445, or a little fewer than it was said to be in 1851. By the census returns of 1851, there were about six persons to a house, and if the same proportion be assumed in estimating the present population, the number of inhabitants is found to be 20,425. As the houses cover about 271 acres of ground, there are 64 square yards for each person.

There are no military hospital returns, with the strength and admissions accurately noted, that can be used as a criterion of the salubrity of Nasik. Any considerable number of troops that has been stationed here, has remained but a short time, and under such circumstances it is not easy to separate imported disease from that due to endemic cause.

The dispensary and civil hospital returns give only the numbers of admissions for the various diseases, and do not show the number from which those admissions took place, and the applicants for medical aid at such institutions can be but a small part of the sick of the town, and probably represent its most destitute portion.

The admissions at the dispensary for fever during the 15 years 1850 to 1864 were 3,344, and they were distributed among the 12 months in the following millesimal ratios:—

January.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
97	59	67	80	72	80	99	90	72	74	98	112

This does not show the marked increase, after the south-west monsoon, that is seen in the returns of sickness at places where paludal miasm is in great activity; and from the periods of the most numerous admissions coinciding with the times when, on account of the rain or of the cold, the people were most shut up in their houses at night, it may be assumed that the fever here noted was in great part of ochletic origin, or was due to overcrowding in a foul town. The increase in April may be attributed to the influx of pilgrims at that time.

In the same period there were seven years, but not consecutive ones, in which there was no admission for cholera, and two years in which there were respectively but one and two admissions for that disease. The years 1854 and 1864 were those in which it was most severe. The disease appeared fitfully except in 1864, when it persisted from January

January to June. The centesimal ratios in which the 953 recorded cases occurred in the different months were :—

January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
3·3	9·9	8·3	34·2	28·3	9·3	6·5	0·1	-	0·1	—	—

The Hindoo cremation and burial place was formerly near the Suttee gate, but two or three years ago it was very properly removed to the south of the town where the Nagjeera nulla joins the river. This locality seems to be the best that could be found, but the exact spot that is chosen is objectionable. It is in the bed of the river, and as it cannot be used during floods, irregularities are committed at those times, and interments are made anywhere in that neighbourhood, but chiefly at Joonee Gurhee, where, as was also said, infants below the cremation age of two years are always buried.

The Moosulmans, as is usual elsewhere, have numerous burial grounds, and every Musjeed or Peer's resting place, whether in or out of the town, has graves about it. Their chief burial place is at Jehangeer Musjeed, at Top Mundaee, outside and on the south of the town. The Europeans' burial ground is also to the southward of the town at a greater distance from it, and near the Travellers' Bungalow.

The Municipal Act has not been long in force, and the Municipality has not yet undertaken any works of improvement. The expenditure has hitherto been for scavenging and repairs. There are four filth carts and 15 sweepers employed; the number of sweeper families in the town amounts to 20. The income is solely from house-tax, and the assessment for the current year is at rates varying from half a rupee to three rupees a-year, and the amount expected to be realized is 6,207 rupees. The appearance of the town favours the opinion that higher rates would be easily borne, and the Municipal Commissioners, being of that opinion, wish to add the higher rates, four and five rupees.

Recommendations.

The very foul state of the Suruswuttee nulla in the heart of the town is the most obtrusive evil, and a remedy for this is earnestly sought by those who have the management of the Municipal affairs. Arching over the nulla has been proposed as a means of abating the nuisance, but the expense would be more than could be met. It has also been proposed to lay a cast-iron main drainage pipe along the bottom of the nulla for the fair weather sewage, which it would receive from the street drains by branch pipes, and carry from this and from all the drains that now open on the river side, by a cast-iron main that would be laid from Dangur to Ootura at the most northern part of the town, to the mouth of the Nagjeera nulla, at its southern boundary—the distance between these two points is 5,920 yards. The estimated cost of this scheme is 112,000 rupees. Although the fall is great, yet there is room for apprehension that the pipes would become choked unless branches of them were to be substituted for the street drains and house drains and communicate with the houses by grated openings only; but the carrying out a scheme so comprehensive as this has not, it is thought, been seriously contemplated. The imperfect construction of the street drains is such, that they readily admit earth and grit through the insterstices of their masonry, and instances were seen at the inspection where drains were actually thus choked. There is reason to fear that the iron mains could not be kept clear with such feeders as they would have.

However much it may be desired to adopt and at once to carry out the best and most comprehensive measures for the improvement of drainage, it is obvious that, with the small pecuniary means that are likely to be available for the purpose, some scheme far short of perfection is all that is practicable.

1. To remedy the great evil arising from the Suruswuttee being the receptacle of sewage, it is recommended :—That no drains be allowed to discharge their contents into the nulla, but that on its right side the street main of Hoondee gullee, which receives the drainage of Pinjarghat and Helbaoree gullee, instead of opening, as now it does, into the Suruswuttee, should be continued into the existing drain of Bempeepoor, that runs like it parallel to the nulla, and which receives the sewage from parts of Tambut Alee and Poonakur gullee, and that the united drain be continued until it reaches the river side. Thus these existing sewers might, at little expense, be converted into an intercepting drain for the right bank of the nulla. The drainage now falling into the Suruswuttee nulla on its left bank should also be intercepted, and for this purpose a new drain would probably have to be constructed, but the extent of drainage area on that side being comparatively small, the drain would be but short. There should be a main sewer along the river side to carry the sewage to a point below the town, as proposed by the executive engineer, but it should be of masonry, not iron piping, to allow of its being cleared out as well as flushed. This river side sewer might in the first instance be made from the mouth of the Suruswattee nulla downwards, and the main for the upper part of the town might be subsequently constructed, so that no sewage should fall into the river. No

drains should be allowed to discharge into the Suruswuttee nulla, it should be reserved solely as a channel for carrying off the storm waters. The discharge of privy soil and the throwing of filth into the nulla from the houses on its banks ought at once to be peremptorily interdicted, as being an intolerable nuisance. The openings of the privies and drains into the nulla should be closed. If needful, as it very probably may be for a little while, a man should be placed for the sole purpose of preventing and reporting infractions of the prohibitory order.

2. The levels seem favourable to the utilization of the town sewage as manure in the fields, when conducted to the spot mentioned, which is below Talkootia's temple to Mahadeo, and the Municipality should use every endeavour to induce the cultivators in that locality to make use of the liquid manure.

3. It is recommended that a filth cart, capable of containing night soil and house refuse, be sent every night to visit Bembeepoor and such part of Hoondee gullee as may be wide enough to admit it, in order to give the inhabitants facilities for the proper disposal of the filth which they now throw into the nulla. The cart should visit also the line of houses between Bura Suruk and the nulla, for the same purpose.

4. There should be an appointed place of deposit for filth, out of the town, at its south or south-east side, as the wind blows but seldom from those points. An appropriate place might be found either eastward of the mouth of the Nagjeera nulla, or in the swampy field at Tulaoree, which might be purchased at small cost and drained for the purpose. Another place of deposit might be found to the south eastward of Punchwuttee.

No sweepings, litter, or filth of any description, should be permitted to be deposited at any other places than those appointed. Nor should any accumulation of filth or manure be allowed in private premises within the town. To prevent this, there should be men appointed to the duty of visiting the houses in all parts of the city. A sufficient number of scavenger's carts should be employed; the present number cannot be enough to meet the requirements of cleanliness, even if they be supplemented, as proposed, by pack donkeys for the narrow lanes.

5. To supply the wants of those whose houses have no private conveniences, a latrine for males and one for females should be provided where they are obviously most wanted. The localities that should be first supplied are at the north and the south ends of the town and at Punchwuttee. Near Dangur Ootura or the Suttee gate it appears would be as favourable a place as could be found for the northern latrines; they should not be placed on the west or north-west of the town. Some spot between Bhugooda gate and Tulaoree should be chosen for the south of the town. Doorgaree, under the cliff of the Tekh, is a place where latrines would be very useful if a road to it could be made above the reach of the river floods. For Punchwuttee, latrines should be placed to the south-eastward of the district.

When this provision is made for the wants of the poor, there should be a strict enforcement of the law against the commission of such nuisances as the latrines are intended to abate. Pending the construction of latrines, it seems advisable that use should be made of field latrines, in the form of narrow trenches in the earth, into which part of the excavated earth should be thrown daily to cover the soil deposited.

6. The river bed between the Pool and the Delhi gate should be improved, by filling up the hollow between the inner and the outer terraces. It would be useless merely to fill it with earth or gravel, as this would be displaced by the first freshet. The surface should be faced with stone or rubble.

7. Where the gradient will admit of the metalling lying on macadamised roads, and the demand for the employment of wheeled transport is great, such roads may be desirable; but for sanitary reasons the present stone pavement is the best for Nasik. The pavement, where out of repair, should be relaid with more attention than has been given to fitting the stones one to another, so as not to leave wide crevices. Each householder should be made to keep the pavement opposite his house in repair.

8. For the sake of the benefit that would attend better ventilation, every opportunity offered by a house becoming ruinous, and every other occasien, should be made use of to widen the streets. The Chubootra or stone benches should not be allowed to project into the streets to the inconvenience of passengers and the obstruction of traffic.

9. The tanneries and potteries should all be removed out of the town, and in a south-eastern direction.

10. The slaughtering of animals should be allowed only at some appointed place outside of the town—it might be near where the beef is sold in the southern suburbs.

11. A proper market-place should be provided either in the town or close to it on its western side, and where it would be of easy access to all.

12. A site for burial grounds should be found in the neighbourhood of the place now used by the Hindoos, but out of the reach of the river floods. Burials elsewhere should be prevented.

13. The Municipality should do all in its power to obtain a more copious supply of pure drinking water. It is probable that the Nasurdee river, which now supplies Dhondoo

Punt's Kurunja, and which is conveniently near, would afford a sufficiency for several other fountains. Or if the quantity obtainable from that source be too small, it will be advisable to examine into the practicability of bringing water by conduit from the Godavery above the town.

There is not one of the works that have been now mentioned that is not of high importance. Some of them may be easily carried out at once, but there are others, that are connected with the drainage, paving, and supply of water, that will be attended with much expense, and to meet which the present income of the Municipality is inadequate.

14. It is recommended that other means should be adopted for increasing the Municipal funds besides raising the house tax, which, even when the rates for it are increased, will be sufficient. An octroi is what most readily suggests itself as least objectionable under the circumstances.

(signed) *A. H. Leith*, M. D.

REPORT on Trimbuk.

(Visited in October 1865.)

The village of Trimbuk is 18 miles nearly W. S. W. of Nasik, in a basin about three-quarters of a mile diameter, and almost surrounded by high hills. Although it is only three miles in direct line from the western face of the Syhadree mountain range, yet it is almost completely excluded from western breezes by the intervening hill on which the nearly inaccessible Fort of Trimbuk is built. This Fort is 4,255 feet above the sea level, and probably about 2,000 feet above the village, and the hill on which it stands presents towards the village a steep slope at its base, formed by the accumulated fragments of trap rock that have fallen, and above this a mural, in some places an overhanging cliff of probably 1,000 feet in height. A wall-like ridge of lower elevation is continued eastward to the table-topped Unjuneree hill, which equals Trimbuk in height. In this connecting spur there is a gap, named Mahadurwaza, at what is called Kotla Modla, but this opening can do little towards ventilating the valley. The bottom of the basin is uneven, it is partially cultivated, and in some parts it is swampy.

The village has only 562 houses, and a population of about 3,082 persons, and would not be deserving of particular notice were it not a far-famed place of pilgrimage, to which many resort at all times to bathe at the reputedly sacred source of the Godavery, and at which there are two annual Jutra, and a more celebrated one every 12 years, that brings an immense influx of pilgrims.

Trimbuk is in the middle of the little amphitheatre of hills. The ancient outline of the village is broken by the cultivated patches that now occupy the place where houses once stood, and that show the extent of its decay, or at least of its diminution. It consists of single houses with small walled gardens or courts, and of rows of houses placed irregularly, but here and there forming a street. The bazar is a narrow, crooked lane, eight or ten feet wide, with shops on either side in the lower floors of the houses, that are of two and a few of three, low storeys: the road is of loose shingle.

In other parts of the village there are many large houses that are well built, and some of them have ornamentally carved verandah posts and gorbals. All are on well raised plinths, and most have deep verandahs; the roofs are tiled, and have a great pitch and far-projecting eaves, and some of the houses have weather boards as a further defence from rain, which, judging from these defensive expedients, must be heavy. The tiles are flat with turned up edges, like those at Nasik and the city of Poona. The lanes and passages between the houses are unmade, uneven, and in wet weather very muddy. There is one line of road laid with stone to allow the idol car of Trimbukeshwur to be taken in procession.

There are several well-built temples of cut stone, and there is a large Muth at the Gunga temple in the middle of the village, where Gosain, or other religious mendicants, are accommodated.

A large portion of the inhabitants are Brahmins, who are connected with the temples. There are also men of different trades, and a considerable number of shopkeepers. The greater part of the population, however, consists of Koolee, not of the hill tribe, but cultivators, who here and in Pengulwaree and other villages take this name, which appears to be synonymous with the Koonbe of other parts of the country. There is but one family of sweepers, and they are said to be employed in cleaning the streets, and to be very seldom called to the premises of the inhabitants, as the domestic arrangemente are thought to be such as to supersede their services. It is usual for a family to have a drain leading from the privy as well as the bathing place, to what my informant called a jeera; jeera is a name usually applied to a spring of water, but here it means the converse, and is applied to a pit, the equivalent of the *éponge* in the courts or gardens of houses at Marseilles, and too well known in other European and Indian towns.

The water supply of the residents is wholly from tanks. There is a well on the south side of the Gungala tank, which once was in good repute, but now is ruinous, and one beside the Vitoba Muth that is used by the Pundhurpoor pilgrims who lodge there. There are in all eight tanks in and around the village, but only two of them are considered, even by the villagers, to afford good drinking water: they are the Isoba tank at

some distance on the south, and not much used, and the Gungala on the west. The latter is a large tank with stone-lined embankments, and the body of water it holds is abundantly sufficient to maintain its purity under ordinary circumstances, but it is resorted to by nearly all the inhabitants and pilgrims, not merely to draw water from it, but to bathe and wash their clothes in it. It is fed by springs, and its water is never exhausted or even greatly diminished. Its overflow is the beginning of this branch of the Godavery, which, although not the highest or most distant, yet is considered the sacred Gunga. The stream is conducted to the temple of Gunga in the middle of the village, where it feeds a large cut-stone reservoir—the Kooshawurt, which is considered by the Hindoos to be the proper and efficacious sacred bathing place. This reservoir had become very foul, and its water was very nauseous to the pilgrims, who had nevertheless, as a matter of conscience, to drink of it as well as to bathe in it; but it has recently been cleaned at the expense of a first-class Sirdar, who also has given an expensive ruth in which to carry the image of Trimbukeshwur.

The waste water and leakage of the Gungala flows through the village in a channel lined with cut-stone masonry, with steps of descent at short intervals. The bed of this nascent Godavery was very foul, and the water, which disappears altogether in the hot season, was already low; the quality of the water may be judged of, when it is stated that pigs and crows were seen feeding in it. The last defilement the Godavery receives before it leaves Trimbuk, is from the ashes of the dead that are thrown into it—the place of cremation and of burial being a short distance below and to the eastward of the town.

In the rains, and for a short while after them, a small stream trickles from one of the numerous perpendicular fissures on the face of the scarp of Trimbuk hill, and flows under a small stone image of the goddess, which stands in a niche, and which is a chief object of worship, although several other idols have likewise their niches in the rock. The great fatigue of the long ascent to this spot is lessened by a well-built stone stair, a work of great magnitude and of recent construction. The stream, even where above the reach of man, is not free from defilement, as monkeys (makur) were seen passing along it. On the top of Neelpurot there is a temple of Bhowanee: and a Bhatie of Bombay has lately devoted, it is said, 14,000 rupees to build a stair or way of ascent for the pilgrims to this temple. There is no periodical Jutra to this Bhowanee.

There is a Jutra in April or May every year to Trimbukeshwur, at which some 4,000 to 6,000 persons assemble. They are in part lodged in the town, but most of them encamp on the ground near the temple, which at any other season would be very objectionable, from its surface being in part broken and hollow, but in the middle of the hot weather this is of less consequence. The pilgrims encamped at this place are far removed from good drinking water, as the large Gotmul tank behind the temple is foul, owing to the surface drainage of the village being allowed to flow into it in the rains.

An endeavour is being made by the Brahmuns of Trimbukeshwur temple, since the new idol car has been received, to establish another annual Jutra, to take place in November; but it is to be hoped, for the sake of the health of the pilgrims, as well as for other reasons, that the attempt will not succeed. The hill-encircled position and the undrained ground of the little valley in which the village lies, is such as may always be considered unhealthy, and experience abundantly proves this to be the case in the instance of Trimbuk. Sickness, and especially fever, is very prevalent, and it is much more so at the particular season that has been chosen for the proposed new Jutra than it is at other times.

There is also an annual jutra of the worshippers of Vitoba in January, at which it is said four or five thousand persons congregate. These pilgrims lodge in the Muth beside the Gungala tank, or encamp arround it. The ground is generally favourable for the purpose.

The Jutra at which Trimbuk is most largely visited takes place once every 12 years, on the recurrence of the year called singhustha in the Rashee Chukra or zodiacal cycle. The Jutra lasts all that year, but it is said to be most numerously attended in October, which is a very unfavourable month as regards health. The last singhustha corresponded with the year 1861.

Cholera sometimes appears at the Jutra, and then the mortality is very great; it had been absent from Trimbuk for several years, and when it broke out this year the Jutra was over. There were 41 deaths in June and four in July.

There is no municipal corporation in the village, and there is no power to raise funds for conservancy purposes.

Excepting what the police do in ordering the removal of obstructions on the road and preventing any gross interference with public convenience, there is, so far as I could learn, no authority exercised regarding nuisances.

It is very desirable that the Municipal Act should be adopted here, and that power should be possessed to make the pilgrims contribute towards the funds required for sanitary improvements, as it is for their wellfare as well as for that of the villagers that they are needed. In this and in similar instances, should the inhabitants be backward in taking advantage of the Act, there seems reason that they should by constraint be placed under it.

The improvements that are most urgently required are, that the water of the Gungala tank, on which most of the residents and very many visitors depend for drinking water, be guarded from pollution. This might be effected at little expense, merely by placing policemen to prevent the people from bathing and washing their clothes in the tank, and by affording them facility for doing so on the outer slope of its bank, where troughs should

be

be placed, as described in the Report on Sholapoor, for their convenience, and a trench should be made to drain away the waste washing water.

The lanes in the village should be laid with stone; rubble would be sufficient for the purpose.

The surface drainage of the village, instead of being allowed to flow to the Gotmul tank, should be diverted elsewhere, which it is thought would be easily effected.

The use of the jeera, or absorbent pit, should be prohibited in the village, and the use of vessels, in which the filth may be carried away, should be introduced.

The swampy parts of the valley should be trenched and drained, and the encamping ground beside Trimbukeshwur temple should be improved.

At the time of a Jutra, a strict conservancy police should be employed to maintain cleanliness on and near the encampments.

(signed) *A. H. Leith.*

BOMBAY SANITARY COMMISSION

REPORT

OF THE

SANITARY COMMISSION FOR BOMBAY,

1865.

(*Presented to Parliament by Her Majesty's Command.*)

Ordered, by The House of Commons, *to be Printed.*
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BOMBAY SANITARY COMMISSION.

REPORT

OF THE

SANITARY COMMISSION FOR BOMBAY.

1866.

India Office, Military Department,
2 December 1867.

T. T PEARS, Major General,
Military Secretary.

(*PRESENTED TO PARLIAMENT BY HER MAJESTY'S COMMAND.*)

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REPORT

OF THE

SANITARY COMMISSION FOR BOMBAY,

FOR THE YEAR 1866.

A BRIEF notice of the subjects pertaining to sanitary measures, which have engaged attention during the year, seems all that is necessary, as these matters have been dealt with in detail in the printed proceedings of the Commission, published monthly. **Prefatory.**

It having been brought to the notice of Government that a more general distribution of the monthly printed proceedings of the Commission was desirable, a large increase was, under sanction, ordered of the number of printed copies, and these are now placed in the hands of all heads of departments, and in those of the Quartermaster General of the Army, and of Chief and Superintending Engineers, in sufficient numbers to afford a copy to each officer under them. **Printed Proceedings.**

EUROPEAN TROOPS.

BARRACKS.

The work requisite for affording to European troops the regulated space per man has made much progress, and it is believed that, taking together permanent and temporary constructions, the floor superficies of 90 feet per man is now available for the standard garrisons of all stations within the Bombay Command. **Space.**

Deficiency still exists in the barracks at some stations as regards cubic capacity. A copy of a barrack distribution return, prepared in the office of the Quartermaster General of the Army, is printed in the Appendix.

Numerous plans and specifications in connection with proposed new barracks have come under review during the year, and, under instructions from Government, Colonel Bell, R. E., Superintending Engineer, Northern Division, and a member of the Commission, undertook the work of preparing for general guidance, a plan of barrack, modified from the Bengal standard plan of artillery barrack, to suit the requirements of this Presidency, and, in communication with the Sanitary Commission, has furnished a design, with enlarged drawings of details, lithographed copies of which have (since the close of the year) been circulated by Government. **Barrack design.**

A proposed arrangement for deadening the sound of rain on iron roofs for barracks and hospitals, by the introduction of a layer, about three inches in thickness, of charcoal consolidated with lime grout, immediately over the plank lining of the roof, was brought forward by Colonel Bell, R. E., Superintending Engineer, Northern Division, and has been adopted, but the result has not as yet been stated. **Iron roofs.**

The ventilation of barracks and hospitals has received much consideration, and on its being decided to adopt for the ventilation of the ground floors of upper-storied barracks—in place of the older system of numerous, and sometimes very irregular, small horizontal outlets,—the improved system of few and carefully built outlets of larger section, in the form of vertical shafts piercing the masonry walls of the upper storey or storeys, the Sanitary Commission recorded their opinion that for such shafts a proportion of one superficial inch of transverse sectional area to every twenty solid feet of the rooms' space would suffice, but, **Ventilation.**

under the opinion of His Excellency Sir Robert Napier, Government have decided that the sectional area of the air shafts shall be twice as large as that noted above.

Disposition of Beds. In supplement of the principles of barrack construction issued by the Government of India, and printed in the Appendix to last year's report, the following was published:—"that there shall be only two rows of beds in a ward; that no beds shall be placed within nine inches of a door; and that not more than two beds shall be allowed in the wall space between two contiguous doors." The Army Sanitary Commission in England questioned whether the above arrangement would afford sufficient shelter from draughts, and advised the use of chicks or small screens. It was considered, however, by authorities in India that the Sanitary Commission in England held an exaggerated opinion of the injurious effects of draughts in the plains of India.

Doors versus windows. The question of the proper relative proportion of doors and windows in barracks was referred for the opinion of numerous officers, and of the Sanitary Commission. The weight of the opinions tended to the view that, as a rule, in stations on the plains in this Presidency all side openings should be doors, and that in hill stations windows should be introduced in lieu of doors in a proportion varying according to circumstances.

Fireplaces. The provision of fireplaces in the ground-floor rooms of barracks, on the plains (where thought desirable), and in all rooms at hill stations, was ordered by the Government of India. Ahmedabad, Deesa, Mhow, Neemuch, Nuseerabad, and Belgaum have been specified as stations in this Presidency where such provision should be made. Details of such fireplaces as are adapted to wood fires are among the plans noticed above as approved by the Sanitary Commission, and recently circulated by Government.

Ceilings. The necessity for giving double roof coverings to all buildings on the plains occupied by European troops was also notified by the Government of India, and various arrangements for effecting this object in the best manner have been under consideration by the Commission.

Eaves-gutters. The provision of eaves-gutters to the roofs of all buildings in this Presidency has been invariably represented as necessary by the Sanitary Commission.

Ground-floors. The appropriation of the ground-floor of all barracks for day-rooms and other auxiliary accommodation was decided on by the Government of India. The introduction, however, of the canteen, or of workshops for offensive and noisy trades, into the main barrack buildings has been noted by the Commission as objectionable.

Lavatories.

Standard plan. An approved plan of lavatory was circulated by the Government of India in substitution of that previously issued. It was considered that the building would be better ventilated, and that it would be equally convenient, if the bath rooms were arranged at the ends instead of along the sides, and a plan on this principle, prepared by Mr. Howard, Executive Engineer, Poona and Kirkee, received the general approval of the Commission, pending questions of some details.

Fittings. The supply of water to lavatories by gravitation, and the provision of supply, overflow, and discharge pipes in connection with fixed basins have been steadily advocated by the Commission. The introduction of foot pans, alternating with the basins, and supported on brackets, was also recommended.

Drainage. The conveyance of the waste water by pipe to a distance, to be discharged into an excavation, filled in with dry rubble, on the bank of a nulla, has been represented as desirable.

Basins. The necessity for providing portable basins for use on the march, in hospitals, and on occasions when ophthalmia or other like contagious disease is prevalent in a regiment, came under consideration, and the question of the proportion in which the basins should be issued was referred to the Commission, who expressed an opinion that for ordinary occasions 20 per cent. would suffice. It was subsequently settled at army head-quarters that every soldier should have his own basin, but the authorities in England have demurred to such a proposition.

Enamelled

Enamelled iron basins have been in use in some corps, but no report as to their adaptability or otherwise for barrack use has been made; it has, however, been casually observed that the enamel is apt to crack, and that the basin is not durable. Material.

Latrines.

In consultation with the Commission, Colonel Bell, R. E., prepared a design and specification for a latrine on the dry earth conservancy principle, suitable for European troops. The design has been lithographed, and copies have been circulated by Government for general guidance. Standard plan.

The alteration of latrines to adapt them to the dry earth system of conservancy has been generally completed, and that system is believed to be now followed in all corps in this Presidency, except in the Colaba garrison. There can be no question as to the great sanitary advantages which the adoption of dry earth conservancy in latrines has produced, and in practice the system seems to be working satisfactorily. Dry-earth conservancy.

Urinaries.

The approved temporary structure, which entails no masonry work, has been provided conveniently near all barracks, and answers its purpose well. Construction.

To prevent the feet being soiled by the damp or wet earth in the tray in which the urinal vessel is placed, a circular iron grating, to place over the tray, and on which a man could stand, was designed, and the making of a number has been ordered with a view to trial. Gratings.

The substitution of glazed earthenware vessels for those in use, of metal, was considered. On inquiry it was found that the sort of vessel required could not be manufactured at any place in the Bombay Presidency. Urinals.

The provision of urinaries at plunge baths, so as to check any propensity in a man to defile the water in the bath, has been represented as requisite. Plunge baths.

Cookhouses.

A plan was prepared, under the supervision of the Commission, and has been lithographed, and (since the end of the year) circulated by Government for general guidance. Standard plan.

The objectionable sinks inside the cookrooms, with outflow into cesspools, close outside the walls, have been done away with, and a plan of raised sinks, placed in verandahs and discharging into tank-carts, has been adopted. Sinks.

In the smaller cookrooms of family quarters and battery hospitals, &c., the raised sinks were not considered necessary; the use in them of galvanized iron pails was recommended. Pails.

Hospitals.

The principles of hospital construction, issued by the Government of India, are recorded in the Appendix. Construction.

A design for a dead-house on an approved plan was prepared under the supervision of the Commission, and has been lithographed, and (since the end of the year) circulated by Government for general guidance. Dead house.

Military Prison.

The formation of a prison for 50 European military prisoners at Panchugunnee has been determined on, and, in communication with the Inspector General of Prisons, and the Executive Engineer, Sattara, a decision has been come to as to the arrangement and general disposition of the buildings.

Dietary.

Meat. The poor quality of the meat generally supplied to the troops by contractors was strongly commented on by Sir Robert Napier, and on his recommendation the Commissariat were instructed to arrange for supplying meat departmentally at all stations.

Slaughter yards. It being brought to notice that it was undesirable, as affecting the live animals, that sheds for cattle should be contiguous with slaughter yards, as before proposed, the Government of India directed that the two be kept entirely separate.

Foul forage. The feeding of milch and other cattle on foul forage was brought to notice by the military authorities in Sind, which led to recommendations being made with the view of stopping the obnoxious practice; these comprehended the fencing of manure yards, the burning of stable litter, where it could not be disposed of *bonâ fide* for manuring land, the making of special stipulations on the point in contracts with dairymen, and the enforcing of the rule that animals shall be fed for 30 days at least in the Commissariat yards before they are slaughtered.

Salt meat. It having been brought to notice that, on the occasions of condemnation of the meat rations by committees, there was difficulty in procuring a supply for the day, Sir Robert Napier proposed that a stock of salt meat should be kept to meet such emergencies, and the proposal was ordered to be carried out at two stations by way of experiment.

Vegetables. Owing to the scarcity and high price of vegetables at some stations, a reference was made to the Commission as to whether European vegetables, when only procurable at such high rates, should be supplied to British troops. It was ordered by Government, in accordance with the recommendction made, that, without reference to cost, of the eight ounces of green or succulent vegetables forming part of the ration, four ounces should be of European kinds.

Wells. The liability of well water to pollution, owing to defilement of the ground immediately around wells, was pointed out in connection with a reference relative to the prevalence of guinea-worm among the native troops at Poona, and directions were given that the circuit of all wells in cantonments, which afford drinking water, should be paved and drained. This correspondence was re-published by the Government of India for information and guidance.

Ice. The subject of supplying troops, at several stations, with ice, was mooted, and application was made to the Secretary of State for India for an ice machine, which it was proposed to use experimentally at a station in Rajpootana.

Filters. The inefficiency of the mode of filtration of drinking water, at present followed in barracks, came under notice, and steps have been taken to procure 50 patent filters from England for trial.

Tea strainers. Tea-strainers, recommended by the Commission, having been tried in two regiments, and very favourably reported on as instruments for tea-making, were sanctioned as an article of barrack supply, and measures were taken for procuring them, made of the best block tin.

Prisoners' dietary. The inadequacy of the food allowed to military prisoners was brought under notice by the officer in medical charge of the 26th (Cameronian) Regiment, and a suitable diet table was prepared, and Government ordered its adoption. (Appendix.)

Bedding.

Mattresses. The President, having noted that in an abstract in advance for compensation in lieu of articles of bedding, about half of the regulated number of mattresses to which the particular regiment was entitled was included, represented that it was objectionable that *numdas* that had already been two years in use should be continued to be used, and recommended that these articles of bedding should be always issued in kind. Government passed an order to that effect.

Hammocks. A hammock for use in the field was exhibited by the inventor, Captain McGwire, 1st Royal Regiment, to the Commission, and was reported on as calculated

lated to be useful; objections on the score of heat in a tropical climate being at the same time pointed out.

The necessity of supplying additional bed clothing to soldiers and soldiers' wives at hill stations was represented to Government, and an opinion was expressed that good European blankets should be issued to all and sundry pertaining to the non-commissioned rank and file on embarkation for England, and that it was objectionable that bedding that had been long in use should be taken on board ship. Blankets.

Clothing.

Several medical officers recorded their opinion that the helmet recently introduced is a very defective protection from the sun for some parts of the head. Helmets.

Light.

A recommendation was submitted to Government that a trial should be made with kerosine oil for lighting barracks. The reports on the subject were unsatisfactory, in as far as they did not deal with the illuminating power of the oil. The Government of India having, in the interval, sanctioned the lighting of all hospitals with kerosine oil, it was suggested that information on the subject should be called for from Calcutta, and a communication on the point is now awaited. Kerosine oil.

Officers' Quarters.

On a design for officers' quarters, submitted by the Commission in compliance with a request of the Government of India relative to the report by the President on the quarters occupied by officers at Poona and Bombay, a correspondence arose which led to the proposed accommodation being contrasted with that sanctioned for Serjeant-majors and Serjeants of Class A, with a view to showing that what was asked for for an officer was not excessive. Two designs for officers' quarters were at the same time submitted, and Government sanctioned their being considered alternative plans. Accommodation.

Military Buildings.

An order was issued by the Commander in Chief that committees of officers of standing and experience should be assembled on the 1st of August at each station to inspect military buildings, and to furnish a list of the new works, alterations, additions, and repairs that had been effected, were in progress, or seemed requisite or desirable. Annual report.

Cantonments.

Authority was obtained for the local legislation to pass a "Cantonment Act," the point of levying municipal taxes being, however, reserved for further consideration. An Act has been drafted. A set of "cantonment rules" framed by a special committee convened at Simla were submitted to the Commission for report regarding their suitableness for Bombay stations. Legislation.

Boards of Health were established at every station, and rules relative to the conservancy of cantonments, supplementary to those existing, were submitted by the Quartermaster General, and approved and published by Government. (Appendix.) Boards of Health.

Rules for the prevention of venereal disease were promulgated under clause 7 of Act XXII. of 1864. It is not known that any action has been taken in the matter at any station in the Bombay Presidency, except at Nuseerabad. Venereal disease.

Government authorised the provision of latrine accommodation for camp followers and those residing in cantonment bazaars. Latrines.

Movement of Troops.

Rest-houses.

Orders were issued for the provision of rest-houses, at intervals of from 200 to 250 miles apart, on lines of railway. Exception was taken by the Commission to the 65 superficial feet and 1,040 cubic feet of space per man laid down as to be provided in the barracks for single men, it being reasonably argued that better provision is made in guard rooms for prisoners detained for one night, and that the traveller should not be worse off than the prisoner. The objection to lodging the serjeants entirely in the verandas, and thus excluding them from sharing in the shelter from heat and in the ventilation provided for the men, was pointed out, and also that the probable presence of children had apparently been lost sight of in fixing the space allowed for families ; 16 feet square was specified as room, which would be no more than enough for a family.

Overland transport.

In a reply to a reference made by Government on the subject, the stations that may be considered accessible or inaccessible, as regards the movement of troops with a view to their embarkation in September, were specified.

Ventilation.

The President was called upon by Government to frame rules to be followed in providing for the ventilation of troop-ships. (Appendix.)

Anti-scorbutics.

A correspondence, relative to the quantity of lime-juice and sugar provided for troops on the voyage to England, led to an order that, for invalids, 75 lbs. of each per 100 men should be shipped in addition to the allowance for regular issue of half an ounce per day for the first 20 days, and one ounce per day for the remaining days of the voyage.

STATISTICAL.

Increase and decrease.

The strength of the European army serving in the Bombay Presidency on the 1st of January 1867, according to a return furnished by the Adjutant General of the Army, was 14,404, which is 1,780 men more than on the corresponding date of the year 1866.

The return deals with a gross total of 15,257 effective men.

After deducting 531 men lost to the effective strength from other causes than those pertaining to health, and basing calculations on the remainder, it is found that the loss by invaliding amounted to 35·7 and by death to 10·1 men in every thousand. Sickness thus operated in diminishing the strength of the effective army during the year to the extent of nearly 46 men in every thousand.

Marriage.

The proportion of married men among the private soldiers on the 1st day of May 1866 was as follows :—

Artillery	- - - - -	8·9 per cent
Infantry	- - - - -	7·8 „ „
Cavalry	- - - - -	5·3 „ „

The proportion varied in the Artillery from over 16 per cent. in No. 4 Battery, 21st Brigade, to less than 1½ per cent. in G. Battery, 14th Brigade. In the Infantry from over 9 per cent. in the 26th Cameronians and the 103d Fusiliers to about 5 per cent. in the 96th Regiment. In the Cavalry, the 3rd Dragoon Guards had 7·3 per cent. married, or in a somewhat smaller strength had double the number of married men that there were in the 6th Inniskilling Dragoons.

Sickness and Mortality.

The medical returns deal exclusively with the non-commissioned rank and file of corps, the "effectives," of the army, and embrace the period from 30th December 1865 to 28th December 1866. Out of a (weekly) mean strength of 12,051 there were 717 men constantly sick, and 153 died ; or approximately the services of six out of every one hundred men were wholly lost through sickness, and five out of every four hundred men died.

The sickness has been slightly greater, the mortality less, than in the preceding year.

The rate of mortality for the year 1863 (12·03 per mille) is the lowest that has been attained in the Bombay army; the rate for the year 1866 (12·7 per mille) closely approaches it.

After deduction of 15·4 from the rate of mortality in 1865, which figures represent the mortality of that year, due to the greater prevalence of cholera, a balance

balance of 7 per mille in favour of 1866 is still apparent, and is contributed to by a slightly diminished death rate in all the diseases which have afforded fatal cases.

1,246 admissions into hospital and 27 deaths were occasioned by violence; numbers which bear a ratio to strength nearly equal to that of the previous year. A less severity in the nature of the injuries is indicated by a considerable decrease in the number of fatal cases. Violence.

There has been an almost entire immunity from cholera during the year; the returns show only eight cases, seven proving fatal. One of these cases occurred at Kirkee, all the others at Poona. One case occurred at Belgaum in the 26th Regiment, the man being a patient in hospital when attacked, and another in the artillery at Ahmedabad; these two cases seem to have been omitted from the returns. Cholera.

Malarious fever has been considerably less prevalent and much less fatal than in the preceding year, but has been the cause of four times more sickness than any other one disease, except venereal. Fever.

There were 2,556 admissions from venereal disease, which gives a ratio of 212 per thousand men, and shows a greater prevalence of the disease by 10·3 per mille than in the previous year; it has been the cause of 15 per cent. of the entire sickness. Venereal disease.

The statistical hospital returns cannot be viewed as giving reliable information regarding the prevalence of drunkenness in the army or the effects of intemperate habits on health and efficiency. There is no doubt that many cases of disease, attributable to indulging in liquor to excess, are entered in the returns under other heads than those of "delirium tremens" and "ebriositas." Severe forms of disease, directly attributable to excess in stimulants, seem to have been much less common than in the preceding year. Intemperance.

Liver affections were proportionally most common at Khandalla, Sholapoor, Kirkee, and Neemuch; dysentery at Khandalla, Belgaum, and Bombay. Liver disease; Dysentery.

Scurvy has been twice as prevalent as in the preceding year. Poona afforded the greatest number of cases, which is explicable on the score of the 45th regiment having arrived from Neemuch much debilitated. Mhow, Kurachee, Aden, and Nuseerabad afforded cases in considerable numbers, and in degree according to the order in which they are named. Scurvy.

STATIONAL.

A detailed statement, furnished by executive engineers, of the works completed, in progress, or contemplated, in connection with military buildings, forms part of the Appendix. Military buildings

The monthly statistical and sanitary reports, rendered by the medical officers of corps, were obligingly sent to the Commission, for perusal, by the Inspector General, Indian Medical Department. Monthly reports.

Reports of the sanitary condition of stations, embracing the whole year, were likewise received from senior medical officers in accordance with the instructions of the Secretary of State. Annual reports

From these and other sources the following information has been gathered:

POONA DIVISION.

Poona.—Fever was nearly twice as prevalent at this station as generally throughout the army. Dysentery, diarrhœa, scurvy, and liver complaint prevailed beyond the average.

There was relatively less sickness, but a considerably higher rate of mortality, than at Kirkee.

A few cases of cholera occurred in August among the troops occupying the depôt lines; the usual means of checking the disease were promptly adopted.

The barrack and hospital accommodation of the station had undergone considerable improvement.

The surface drainage at Ghorepooree had been much improved.

The hospital accommodation was insufficient, and one of the new barracks had been used as a hospital.

The accommodation of the depôt was, as usual, supplemented by the use of tents at the crowded season.

A census of the cantonments of Poona and Kirkee was taken on the 12th December 1865, and gave a total of 34,315 souls. The garrison of Poona was at the time deficient by the absence of a wing of each of two European regiments.

Kirkee.—The sickness among the troops at this station was above, and the mortality under, the average; the excess of sickness being chiefly attributable to the prevalence of fever, scurvy, diarrhœa, and liver disease also prevailed.

A few cases of cholera occurred in the station; in one instance only was the subject of the disease a soldier.

The conservancy establishment was reported insufficient.

A site in the neighbourhood of Kirkee for upper-storied barracks, to accommodate a whole regiment of infantry, has been determined.

The carrying out the project of conveying water from the Pashan valley was sanctioned, and the work has been commenced.

Maunderdeo.—The returns from this station embrace the period from 2nd March to 22nd June.

The men were accommodated in tents; the sickness was small, and there was no casualty.

In the beginning of the year it was reported that Maunderdeo was preferable to Panchgunnee for occupation by troops in the hot season, chiefly on account of the greater facility in obtaining water.

Satara.—The troops at this station did not maintain the high standard of health exhibited in the returns of the previous year. There was a large increase of admissions from all the specified diseases, except venereal disease, in which a decrease of 164·4 per mille appears. The type of disease, however, is reported to have been very mild, and but one case proved fatal.

The barrack accommodation has been increased. The floors of the old barracks are paved with roughly-cut stone, and are found difficult to keep dry, as water lodges in the depressions.

The accommodation in the fort was taken advantage of during the hot weather, 50 men being lodged there for a month at a time.

Sholapore.—The health of the troops at this station was highly sasisfactory, but liver complaint appears to be comparatively common, the cases having been proportionately numerous during the last three years. Other diseases were not prevalent.

The barrack accommodation had been increased.

The harness is still kept in the dormitories.

Ahmednugur.—The health of the troops was very good throughout the year. There seems to have been a great immunity from malarious fever. Venereal disease was much the most prevalent affection, and the senior medical officer remarks that a lock hospital is greatly wanted.

Much had been effected to improve the general barrack accommodation. A site has been determined for new Artillery barracks, and material for their construction was being collected.

Tents had been used in supplement of accommodation, and some single men had been lodged in the patcherries, which are ill-ventilated. The temporary patcherry buildings, occupied by the families of the Artillery, are "wretched" quarters.

A proposal to extend the cantonment limits had been entertained, and its adoption is considered very desirable.

The village of Bhingar had undergone some improvement.

Water from the Shahpore aqueduct was expected to be soon available. The water now used is liable to pollution, when passing through the aqueduct in the village of Bhingar. "A dead native was fished out of the aqueduct * * * who must have lain a week or 10 days there."

The

The accommodation at Sulabut Khan's Tomb was taken advantage of in the usual way, both for convalescents and men in health.

Aseerghur.—Almost the whole sickness of this station was attributable to malarious fever, which seems to have prevailed, considerably above the average of other stations. The general health was very good; there was but one death, which was caused by dysentery. The station was occupied by European troops only from the 12th May.

The lavatory accommodation had been improved, but, owing to some imperfection in the outlet water-pipes, had been but little used.

"During the months of September and October considerable malarial unhealthiness prevailed at this station owing to rank vegetation." The medical officer represents that prompt measures were not taken for its removal.

A woman was employed in keeping a watch on the prostitutes, and was the means of bringing some infected women for treatment, and of others leaving the place. The admissions from venereal disease among the troops was 61·2 per mille. In the preceding year they were 139·3 per mille.

Owing to the work of removal of the silt from the tank being in progress, a detachment intended for Aseerghur was detained at Khandalla till May, until the silt was in a state as to dryness that did not leave any apprehension of harm.

MHOW DIVISION.

Mhow.—The admissions from fever at this station amounted to nearly double the general average, yet were nearly a third less than in the preceding year. No other disease was prevalent. The mortality was small, only 7·8 per mille.

Drainage works had been carried on, but the low swampy ground south-west of the Infantry barracks remained as before.

Sanction was accorded to the use of punkhas and tatties in barracks and hospitals during the hot season.

The question was mooted whether, at Mhow and other stations in Malwa, owing to the nature of the soil, the rule for the provision of double-storied barracks, in which the upper floors only are used as dormitories, might not be departed from. The Government of India decided that it was unadvisable to occupy the lower floor of barracks at Mhow permanently as dormitories.

A proposition was made that there should be a place within a short distance of Mhow to which invalids might be sent for change of air, and to which soldiers might resort for recreation during the cooler months; it was recommended that accommodation should in the first place be provided for 20 men.

It was proposed to increase the quantity of water in the wells by raising the water level in the Gumbeer Nulla by means of dams; but it was feared that the natural subsoil drainage would be thereby checked, and injurious marsh produced. The deepening of the wells by five or ten feet, it was thought, would probably produce a larger result than dams, except in the immediate neighbourhood of these.

The occupation of the Cavalry stables at Mhow, and the accumulation of litter in close proximity to the barracks and to windward of them, were the subjects of considerable correspondence. The medical officer of the 6th Dragoon Regiment considered these the causes of increased sickness from fever. The stables were ultimately vacated, and the litter was removed.

Indore.—The troops at this station were relieved every month from Mhow.

The barrack and hospital accommodation, and the general sanitary condition of the cantonment, are reported to be excellent.

The canteen is in a room in the corner of a barrack.

The facilities for obtaining liquor are great, owing to the cantonment being in Holkar's territory, where there exists no order prohibiting the sale of liquor to European soldiers.

Neemuch.—This station has maintained its character for unhealthiness, and has this year been the most sickly of any military station in the Bombay command. The large sickness and mortality are attributable to fever and liver disease. Venereal affections prevailed in a large ratio.

Pending the provision of good barracks for a wing, a reduction of the infantry garrison to two companies was approved by the Government of India

The system of dry earth conservancy was not fully carried out, owing to the alterations in the buildings not having been completed.

The supply of potatoes failed on one occasion, and their quality was frequently very inferior. It was ordered that a supply of preserved potatoes should be kept for issue when necessary. There were eight admissions to hospital from scurvy.

Nuseerabad.—The health of the troops at this station was fair.

Fever afforded only an average number of cases.

There was much sickness from venereal disease. A lock hospital had been established, and the prostitutes who resided within the jurisdiction of the cantonment authorities were kept under surveillance. It is said that the disease was contracted by men cohabiting with women who lived beyond the cantonment limits.

Ophthalmia prevailed to a considerable extent, principally among the families of the infantry regiment, and is supposed to be caused by an ammoniacal atmosphere generated from the cavalry lines, which are close by the patcherries.

A bread-kneading machine was brought into use.

The same scarcity of potatoes as at Neemuch was felt, and similar arrangements were made to meet future wants. There were 14 admissions into hospital from scurvy.

An unsuccessful attempt was made to improve the water supply by sinking a well "in the barrack ground, below the level of the Dilwara well." Other wells had been sunk on the eastern side of the cantonment, but none of them yielded wholesome drinking water.

Ajmere.—The garrison, which consists of one company, was relieved monthly from Nuseerabad.

There was little sickness excepting from venereal disease, which afforded 18 out of a total of 61 cases of admission to hospital.

Little had been done to improve the bad barrack accommodation, as the construction of the buildings does not admit of openings being made in the walls. The use of punkhas and khuskhus tatties was sanctioned for the hot season. There is low marshy ground about a quarter of a mile east from the fort, which gives rise at times to noxious smells.

NORTHERN DIVISION.

Ahmedabad.—Fever, which, with the exception of venereal, was the only prevalent disease at this station, afforded less than the average ratio of cases. Again excepting venereal disease, the health statistics of 1866 compare very favourably with those of 1865.

The sanitary condition of the station is described as being excellent.

Means were wanted for the conservancy of the commissioned and warrant officers' compounds.

The accommodation for the troops had been much increased and improved.

The accommodation for hospital establishments was deficient.

A detailed report on the cantonment forms part of the Appendix.

Deesa.—Fever was nearly 10 per cent. less prevalent, and only half as fatal as in the previous year.

Much progress has been made in extending and improving the barrack and hospital accommodation.

The water from ablution rooms, instead of being conveyed to a distance by pipe, was allowed to soak into the ground in the immediate neighbourhood.

The work of making roads and bridging nullahs had been begun.

There was an occasional scarcity of vegetables, and six admissions to hospital were from scurvy.

Baroda.—The detachment of artillery at this station was very small, and was frequently relieved from Ahmedabad.

The sickness was small, and the mortality nil.

As the artillery bullock sheds were near the well, which afforded the best drinking water for the troops, steps were taken for their removal.

A report on the artillery lines will be found in the Appendix.

SIND DIVISION.

Kurachee.—The health of the troops at this station, as shown by the returns, was slightly inferior to that of the preceding year; but as compared with the generality of stations it was very satisfactory.

There were comparatively few admissions from fever.

Scurvy exhibited itself both in the artillery and infantry.

The bread is reported to have been inferior in quality.

Ophthalmia was prevalent in the infantry regiment, and led to its removal from the station.

The infantry barrack room doors were divided horizontally, so as to permit of the lower half only being shut; this was said to increase the comfort of the men, "who before complained of dust, and of the cold night air blowing on their faces." A diminution of admissions for ophthalmia is said to have ensued. The bad sanitary condition of the infantry officers' lines was on several occasions taken notice of.

A report on the station forms part of the Appendix.

Hydrabad.—The sickness in this station was not great, but the mortality was large, 30·3 per mille. The 2nd Queen's arrived from England in the last quarter of the year, and suffered severely from fever and bowel complaints. Two men of the regiment died. There was only one death in the artillery; the others occurred in the 109th Regiment, one being from suicide.

The bed-clothing is said to have been insufficient for the cold weather.

The hospital compound wall is thought to be too high, and there was an accumulation of refuse of some years' standing just outside it, and the sanitary condition of the vicinity was unsatisfactory. There is no covered passage between the hospital and the latrines.

The family quarters are very defective; there were instances of a family of five living in one room 16′ × 17½′ and 17½′ high.

The manure yard is about two miles from the town, and its condition is stated to have been "horrible."

The water supply for the station of Hydrabad was the subject of a special report.

The period for which troops should serve at Hydrabad was considered, and it was thought that two years should be the limit, owing to the debilitating tendency of the climate.

BOMBAY BRIGADE.

Colaba.—The health of the troops at Colaba appears to have been excellent. Malarious fever and venereal disease, the two affections which, greatly above all others and at all stations, swell the sick list, prevailed in so small a degree as to be noteworthy.

The rate of mortality was high, the number of deaths being eight; one was from suicide, and three were from consumption.

Much pains were taken in the first portion of the year, by occupation of verandahs and a judicious distribution, to prevent overcrowding. Before the end of the year the construction of temporary barracks had been completed, and ample accommodation provided.

It is in contemplation to erect at Colaba double-storied barracks, designs for which have been prepared and have met with much consideration. Much property on the peninsula has been purchased by Government in view to carrying out a project for the formation of Colaba into a military cantonment, in which the whole garrison of Bombay may be located.

The nuisance occasioned by the foul foreshores had been abated by the provision of latrines for the civil inhabitants, and by better arrangements for the removal of the soil from the barrack latrines.

The best way of disposal of this soil came under discussion. One method proposed was to load it in boats and to discharge it at suitable times in the open sea. Questions of expense, of difficulties in the monsoon season, and of the liklelihood of occasional carelessness in complying with the necessary provisions to ensure none of the soil being thrown back into the harbour or Back Bay, have,

at any rate, postponed the adoption of the proposal. It is now proposed to deodorise the soil with Macdougall's powder, and cart it to the municipality's filth depôt at Chinch Bunder.

Khandalla.—No special report has been received from this station, which is occupied by troops only during portions of the year. There were four deaths, all which occurred in the first quarter of the year, in the 4th Regiment, two from liver disease, one from dysentery, and one from acute rheumatism.

It was contemplated to cease using the Khandalla barracks as a habitation for troops; however it was recommended that the barracks should be kept in repair for use in the case of crowding in the Poona barracks, or in the hot months, when accommodation was deficient at Poorundhur or Maunderdeo, or in the case of epidemic disease prevailing at Bombay.

ADEN BRIGADE.

Aden.—The health of the garrison seems to have been very good. There was a large decrease, as compared with the previous year, in admissions from fever, which prevailed in a less degree at Aden than at any other station in the Bombay Command. There were 16 cases of scurvy, but no death. The rations, both animal and vegetable, are stated to have been good and abundant.

In January some of the garrison was employed in an expedition into the interior, and again for several days in March. Every two months throughout the year a movement of troops was made between the cantonment proper and the Isthmus and Steamer Point. The soldiers were occasionally employed in public works. All these circumstances are said to have had a beneficial effect upon health.

The medical officer considers the dry conservancy system not adapted for Aden, where the soil is sand, and there is no cultivation. He fears that burying such filth in the earth may in future years be the cause of much unhealthiness, and proposes that it be thrown into the sea.

The question of sites for proposed new barracks has met with much consideration.

It was decided that the tour of duty at Aden should not be prolonged beyond two years, and that troops on coming to India from Aden should, when practicable, be located at a station in the Dukhun or the Southern Muratha country.

Sanction was accorded to the execution of a project for bringing water from the Shaik Othman wells in the interior, and the work was commenced. A large addition to, and an improvement of, the apparatus for the distillation and the æration of water had been arranged for.

BELGAUM BRIGADE.

Belgaum,—There was, as usual, comparative immunity from malarious fever among the troops at this station. Bowel affections were comparatively most prevalent and most fatal. The number of admissions for venereal disease approximated to 50 per cent., amounted in fact to within 50 of half the entire strength.

Belgaum is notorious for the prevalence of venereal disaase among the troops, and it seems desirable that action should be taken with a view to mitigate the evil.

Cholera prevailed to a small extent in June; several of the artillery followers died from it.

One man of the 26th regiment was attacked in hospital and died; this was the only case that occurred among the soldiers.

There were 12 admissions from scurvy, and it is reported by the medical officer that a scorbutic taint manifested itself among the men of the 26th regiment in the end of the preceding year, and continued during the beginning of 1866, and was, in his opinion, caused by the long voyage from Europe. Some cases of the same disease occurred among the men of the artillery, which led to a correspondence regarding the supply of vegetables at the station. This resulted in an order

order by Government that the troops should have a vegetable ration of eight ounces of potatoes, four ounces of green succulent vegetables of European sorts, and four ounces of good mixed country vegetables, without reference to cost. The opportunity was taken of representing that it was desirable that red pumpkin should be excluded from the schedule.

There was a large addition to the barrack accommodation at this station during the year.

SANATARIA.

Poorundhur.—The mean strength of effectives was only five, that of invalids and convalescents 104. There was but one death during the year, which occurred from dysentery.

There was a marked decrease in admissions from fever and diarrhœa, and a great increase from liver disease, as compared with the preceding year.

The liquor ration was restricted to malt, no spirit having been allowed on the hill; an arrangement which is said to have been of much benefit to health.

The men were engaged in public works, and earned from 8 to 12 annas per day; the work was found conducive to health.

In consequence of the range of temperature being so great during the cold weather, the medical officer is of opinion that the use of flannel shirts is essential to health.

The accommodation of the non-commissioned officers was very defective; and the earthern floors of the barracks are very objectionable.

The barracks required eaves' gutters and better conveniences for washing.

The apothecary's quarters, in process of construction, will afford totally inadequate accommodation.

An isolated hospital ward and latrines for Natives are urgently required.

Mount Aboo.—There was a large number of cases of fever, yet fewer than at any former period.

This is attributed to improvement of the surface drainage, and the medical officer urges the work of sub-soil drainage being undertaken.

The men were "occupied at their own desire upon the public works, with the very best effects upon their health."

A garden was much wanted.

Fireplaces were being constructed in the barrack rooms.

The cells were too damp to be used for a considerable portion of the year.

From the 10th of March to the 13th of June, a detachment was encamped on an elevated plateau, about one-fourth of a mile to the north-east of the barracks, and enjoyed good health.

Complaints were frequent regarding the bad quality of the bread.

Ghizree.—The question of the relative advantages of Ghizree and Munora, as regards a site for a sanitarium, came under consideration. It was represented that Munora had the advantage over Ghizree of "closer proximity to the sea, as the breeze coming so immediately from the water must be cooler than it would be after blowing over heated ground, and as sea bathing could be obtained in the stiller water of the harbour, and with less fatigue than at the former (Ghizree) station. Were the object in view to provide for only a few men, or merely for men requiring to be treated in hospital, Munora should have the preference, but as provision has to be made for a large body of invalids and convalescents who require out-door recreation and exercise, the narrow bounds set by the sea on three sides, and the loose sand and swampy ground on the north, give to this part too much the character of a prison. Taking all circumstances into consideration, Ghizree, which affords a wider range for recreation, should * * * be the site for the permanent barracks."

A number of cases of scurvy from the 95th Regiment, at Kurachee, were received at the sanitarium, which led to the vegetable ration being increased, and lime-juice and sugar being issued.

Teethul.—In April, May, and part of June, invalids from Ahmedabad were accommodated in tents. The strength was 23.

Water was procured from a well, and is reported to have been brackish.

Taraghur.—Invalids from Nuseerabad were accommodated during the hot season in a bomb-proof building, in which there were cots for 20 patients.

The detachment of troops at Ajmere had the advantage of a residence on the hill. A quarter of the number were accommodated in tents, and relieved weekly, so that each man had the benefit of the change during his tour of duty (a month) at Ajmere.

Drinking water was procured from a tank, which at the end of the year was being cleaned out, and having its margin cleared of vegetation.

TABLE I.—INCREASE and DECREASE among the BRITISH TROOPS serving in the BOMBAY PRESIDENCY during the Year 1866.

	Effectives.	Unattached List.	TOTAL.
Strength on 1st January 1866	12,268	356	12,624
INCREASE.			
Recruited in India	24	-	24
Drafted or Transferred from England or Colonies	2,665	-	2,665
Transfers received	278	-	*278
Joined from Desertion	6	-	6
TOTAL Increase	2,973	-	2,973
* Exclusive of 16 men remanded from Unattached List.	15,241	356	15,597
DECREASE.			
Time-expired	191	1	192
Sent to England as Invalids	527	5	532
Discharged by Purchase	18	2	20
" by Court Martial	9	-	9
" otherwise	63	5	68
Deserted	34	-	34
Transfers given	†167	-	167
Transferred on duty to England or Colonies	—	—	—
Died	149	12	161
Promoted to Honorary Commissions	-	10	10
TOTAL Decrease	1,158	35	1,193
† Exclusive of 49 men transferred to Unattached List.	14,083	321	14,404
REVERSIONS.			
Remanded from Unattached List to Effectives	16		
Transferred from Effectives to Unattached List	49		
Difference to be deducted from Effectives and added to Unattached List	33	33	33 —
Strength on 1st January 1867	‡14,050	354	14,404

‡ Includes 6th Inniskilling Dragoons under orders to embark for England, and 103rd and 106th Regiments to be taken on the Bengal Establishment.

N.B.—The following information respecting Transfers is explanatory of the items shown under that head:—

RECEIVED.		
Transfers received from other Presidencies and from Cape of Good Hope	128	
" Locals volunteering for general service	90	
" between corps serving in the Presidency of Bombay		
Received from 56th Foot and 6th Inniskilling Dragoons previous to embarkation of these corps to England	60	
		278
GIVEN.		
Transfers to other Presidencies	22	
" between corps in the Presidency	81	
" granted commissions from the ranks	1	
" given by 6th Inniskilling Dragoons	63	
		167
INCREASE during the Year (Transfers)		111

Poona, 1 January 1867.

TABLE II.—NUMBER of MARRIED and UNMARRIED EUROPEAN NON-COMMISSIONED OFFICERS and SOLDIERS serving in the BOMBAY PRESIDENCY on the 1st day of May 1866.

(From a Return given by the Adjutant General of the Army.)

		Staff Serjeants.			Serjeants.			† Rank and File.		
		Establishment in India.	Actual Strength.		Establishment in India.	Actual Strength.		Establishment in India.	Actual Strength.	
			Married.	Unmarried.		Married.	Unmarried.		Married.	Unmarried.
	Corps.									
Royal Horse Artillery, E Brigade.	Head Quarters	5	4	1	–	–	–	–	–	–
	A Battery	2	1	1	6	5	1	137	10	106
	B Ditto	2	1	1	6	4	2	137	6	100
	C Ditto	2	2	–	6	3	3	137	11	104
	D Ditto	2	–	2	6	3	3	137	10	106
14th Brigade	Head Quarters	5	2	3	–	–	–	–	–	–
	D Battery	2	2	–	6	3	3	137	7	137
	E Ditto	2	1	1	6	3	3	137	12	112
	F Ditto	2	2	–	6	1	5	137	6	133
	G Ditto	2	1	1	6	–	6	137	2	140
Royal Artillery, 18th Brigade.	Head Quarters	5	3	2	–	–	–	–	–	–
	A Battery	2	2	–	6	2	4	137	13	111
	B Ditto	2	2	–	6	4	1	137	14	116
	C Ditto	2	2	–	6	4	2	137	20	119
	D Ditto	2	1	1	6	2	4	137	14	123
	E Ditto	2	1	1	6	5	1	137	13	117
	F Ditto	2	2	–	6	1	5	137	8	119
21st Brigade	Head Quarters	4	*5	–	–	–	–	–	–	–
	No. 1 Battery	2	1	1	4	2	2	70	8	69
	„ 2 Ditto	1	1	–	4	1	3	70	7	58
	„ 3 Ditto	1	1	–	4	2	2	70	7	59
	„ 4 Ditto	1	1	–	4	2	2	70	11	54
	„ 5 Ditto	1	–	1	4	–	4	70	6	66
	„ 6 Ditto	1	1	–	4	1	3	70	11	49
	TOTAL	54	39	16	108	48	59	2,338	196	1,998
	Cavalry.									
Her Majesty's 3rd Dragoon Guards		(a) 12	3	8	28	7	19	476	32	407
Ditto 6th Enniskilling Dragoons		(a) 12	6	4	28	7	20	476	15	419
		24	9	12	56	14	39	952	47	826
	Infantry.									
Her Majesty's 4th Regt. of Foot, 1st Battalion		(b) 9	5	3	40	17	19	870	44	733
Ditto 26th ditto		(b) 9	5	3	40	25	16	870	75	715
Ditto 33rd ditto		(a) 10	9	–	40	15	23	870	64	806
Ditto 45th ditto		(a) 10	4	3	40	16	24	870	74	796
Ditto 49th ditto		(b) 9	6	2	40	26	13	870	71	711
Ditto 95th ditto		(a) 10	7	1	40	13	21	870	70	735
Ditto 96th ditto		(b) 9	4	1	40	17	16	870	29	549
Ditto 103rd Regt. of Fusiliers		(b) 9	7	2	40	16	19	870	84	784
Ditto 106th ditto Light Infantry		8	3	5	40	14	28	870	68	819
Ditto 109th ditto ditto		8	4	2	40	13	26	870	50	744
		91	54	22	400	172	205	8,700	629	7,392
Her Majesty's Bombay Sappers and Miners		2	–	2	4	3	4	8	4	2
	TOTAL	171	102	52	568	237	307	11,998	876	10,218

(1). The fixed Indian Establishment is given above.

* Includes the Hospital Serjeant.

Note:—The Regiments marked (*a*) have each a trained Schoolmaster and a Bandmaster on their establishment; these non-commissioned officers having been posted by the Secretary of State for War. Schoolmasters have been posted under the same authority to Regiments marked (*b*).

Temperance Return.

(Furnished by the Adjutant General of the Army.)

	Average Number during the Year.	Average Daily Sick.	Actual Number of Deaths.	Actual Number Attacked by Cholera.	Actual Number Died of Cholera.	Actual Number Invalided to England.	Actual Number sent to the Hills.	Cases Punished by Commanding Officer.	Cases Tried by Court Martial.	Character.			
										Good.	Indifferent.	Bad.	Total.
Table A.													
Total abstainers	296·09	12·53	1	–	–	6	7	79	–	291·89	3·20	1·0	296·09
Temperate	10893·27	486·09	114	4	3	383	353	6,722	511	10012·78	706·71	173·78	10893·27
Intemperate	982·50	69·29	23	3	3	47	42	1,550	534	82·08	507·53	392·89	982·50
Total	12171·86	565·91	138	7	6	436	402	8,351	1,045	10386·75	1217·44	567·67	12171·86
Table B.													
Drinkers of Malt Liquor:													
Temperate	2916·75	126·86	43	3	2	88	62	1,943	117	2721·09	160·42	35·24	2916·75
Intemperate	226·17	15·00	3	1	1	3	–	222	42	8·0	145·78	72·39	226·17
Total	3142·92	141·86	46	4	3	91	62	2,165	159	2729·09	306·20	107·63	3142·92
Drinkers of Spirits, or both Spirits and Malt Liquor:													
Temperate	7976·52	359·23	71	1	1	295	291	4,779	394	7291·69	546·29	138·54	7976·52
Intemperate	756·33	54·29	20	2	2	44	42	1,328	492	74·08	361·75	320·50	756·33
Total	8732·85	413·52	91	3	3	339	333	6,107	886	7365·77	908·04	459·04	8732·85

III.—Sickness and Mortality among European Troops.

Years.	Mean Strength from Weekly Returns.	Admission into Hospital.	Daily Sick, from Hospital Diets.	Deaths in India.			Invalided to be Discharged.	Ratio to Strength per Mille.				
				In Hospital.	Out of Hospital.	Total.		Admissions.	Daily Sick.	Deaths.		Invalided.
										In Hospital.	All Deaths.	
1865	11,898	18,089	671	402	16	418	176	1,520	56·4	33·8	35·1	14·8
1866	12,051	16,998	717	136	17	153	556	1,410	59·5	11·3	12·7	46·1

IV.—Sickness and Mortality from Classes of Disease.

	Zymotic.	Cachectic.	Local.	Developmental.	Violence.
Admissions	11,411	315	3,889	137	1,246
Deaths	58	23	45	- -	27
Per mille of Strength.					
1866 - Admission	946·9	26·1	322·7	11·4	103·4
1866 - Deaths	4·8	1·9	3·7	- -	2·2
1865 - Admissions	1037·1	29·8	339·1	9·7	104·6
1865 - Deaths	22·7	2·6	6·6	0·3	2·9

V.—Sickness and Mortality from Orders of Diseases.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of Each to All, per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Miasmatic disease	8,464	53	702·3	4·4	49·8	0·3
Enthetic disease	2,556	2	212·1	0·2	15·0	0·0
Dietic disease	249	3	20·7	0·2	1·5	0·0
Parasitic disease	142	- -	11·8	- -	0·8	—
Diathetic disease	145	- -	12·8	- -	0·9	—
Phthisic disease	170	23	14·1	1·9	1·0	0·1
Disease of nervous system	423	9	35·1	0·7	2·5	0·1
,, circulatory system	137	5	11·4	0·4	0·8	0·0
,, respiratory system	562	7	46·6	0·6	3·3	0·0
,, digestive system	1,304	21	108·2	1·7	7·7	0·1
,, urinary system	37	3	3·1	0·2	0·2	0·0
,, reproductive system	233	- -	19·3	- -	1·4	—
,, locomotive system	68	- -	5·6	- -	0·4	—
,, tegumentary system	1,125	- -	93·3	- -	6·6	—
Atrophic	137	- -	11·4	- -	0·8	—
Violence, accidental	1,215	24	100·8	2·0	7·1	0·1
Battle	—	—	—	—	—	—
Homicide	—	—	—	—	—	—
Suicide	- -	2	- -	0·2	0·0	0·0
Punishment	31	1	2·6	0·1	0·2	0·0
Unspecified	—	—	—	—	—	—

VI.—Sickness and Mortality from Various Diseases.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of Each to All, per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Cholera	8	7	0·7	0·6	0·0	0·0
Small-pox	—	—	—	—	—	—
Measles	1	1	0·1	0·1	0·0	0·0
Dysentery	309	12	25·6	1·0	1·8	0·1
Diarrhœa	1,146	4	95·1	0·3	6·7	0·0
Fever, remittent and intermittent	4,207	12	349·1	1·0	24·7	0·1
,, of other type	1,102	14	91·4	1·2	6·5	0·1
Scorbutus and purpura	60	- -	5·0	- -	0·4	—
Delirium tremens	19	1	1·6	0·1	0·1	0·0
Ebriositas	170	2	14·1	0·2	1·0	0·0
Hydatid	—	—	—	—	—	—
Vermes	4	- -	0·3	- -	0·0	—
Phthisis pulmonalis	149	23	12·4	1·9	0·9	0·1
Hepatitis	518	17	43·0	1·4	3·0	0·1
Icterus	64	- -	5·3	- -	0·4	—
Spleen disease	38	- -	3·2	- -	0·2	—
All other causes	9,203	60	763·6	5·0	54·1	0·4

VII.—Poona Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Mean strength, 3,845. Daily sick, 228.)	Admissions	6,044	8	2,009	97	516	96	31	231	9	693
	Deaths	47	7	9	2	4	3	6	4	–	–
	Ratio per mille.										
	Admissions	1571·9	2·1	522·5	25·2	134·2	25·0	8·8	60·1	2·3	180·2
	Deaths	12·2	1·8	2·3	0·5	1·8	0·8	1·6	1·8	–	–
KIRKEE (Mean strength, 468. Daily sick, 38.)	Admissions	848	1	248	10	49	13	1	40	2	105
	Deaths	5	1	1	–	–	1	1	–	–	–
	Ratio per mille.										
	Admissions	1812·0	2·1	529·9	21·4	104·7	27·8	2·1	85·5	4·3	224·4
	Deaths	10·7	2·2	2·1	–	–	2·1	2·1	–	–	–
POONA (Mean strength, 2,210. Daily sick, 137.)	Admissions	3,809	7	1,490	73	346	65	25	143	4	383
	Deaths	33	6	8	1	2	2	5	4	–	–
	Ratio per mille.										
	Admissions	1723·5	3·2	674·2	33·0	156·6	29·4	11·3	64·7	1·8	173·3
	Deaths	14·9	2·7	3·6	0·4	0·9	0·9	2·3	1·8	–	–
MAUNDERDEO (Mean strength, 175. Daily sick, 5.)	Admissions	126	–	12	1	9	2	–	4	–	17
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	720·0	–	68·6	5·7	51·4	11·4	–	22·9	–	97·1
	Deaths	–	–	–	–	–	–	–	–	–	–
POORUNDHUR (Mean strength, 5. Daily sick, 0.)	Admissions	5	–	2	–	–	1	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1000·0	–	400·0	–	–	200·0	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
SATARA (Mean strength, 227. Daily sick, 9.	Admissions	281	–	97	3	26	7	3	7	–	38
	Deaths	1	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1237·9	–	427·3	13·2	114·5	30·8	13·2	30·8	–	167·4
	Deaths	4·4	–	–	–	–	–	–	–	–	–
SHOLAPOOR (Mean strength, 132. Daily sick, 6.)	Admissions	192	–	40	1	6	2	–	18	–	15
	Deaths	1	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1453·0	–	303·8	7·6	45·5	15·2	–	136·3	–	113·6
	Deaths	7·6	–	–	–	–	–	–	–	–	–
AHMEDNUGUR (Mean strength, 530. Daily sick, 30.)	Admissions	683	–	70	8	73	6	5	19	3	129
	Deaths	6	–	–	–	2	–	–	–	–	–
	Ratio per mille.										
	Admissions	1288·7	–	132·1	15·1	137·7	11·3	9·4	35·8	5·7	243·4
	Deaths	11·3	–	–	–	3·8	–	–	–	–	–
ASEERGHUR (Mean strength, 98. Daily sick, 3.)	Admissions	100	–	50	1	7	–	–	–	–	6
	Deaths	1	–	–	1	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1020·4	–	510·2	10·2	71·4	–	–	–	–	61·2
	Deaths	10·2	–	–	10·2	–	–	–	–	–	–

VIII.—Mhow Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Mean strength, 2,810. Daily sick, 134.)	Admissions	4,322	–	1,610	72	176	56	21	124	24	650
	Deaths	22	–	4	1	–	–	3	4	–	–
	Ratio per mille.										
	Admissions	1538·1	–	573·0	25·6	62·6	19·9	7·5	44·1	8·5	231·3
	Deaths	7·8	–	1·4	0·3	–	–	1·1	1·4	–	–
MHOW (Mean strength, 1,415. Daily sick, 56.)	Admissions	2,250	–	966	25	103	28	8	52	11	232
	Deaths	11	–	2	–	–	–	3	1	–	–
	Ratio per mille.										
	Admissions	1,590·1	–	682·7	17·7	72·8	19·8	5·7	36·7	7·8	164·0
	Deaths	7·8	–	1·4	–	–	–	2·1	0·7	–	–
INDORE (Mean strength, 86. Daily sick, 3.)	Admissions	90	–	38	1	2	5	1	1	–	18
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1046·5	–	441·9	11·6	23·3	58·1	11·6	11·6	–	209·3
	Deaths	–	–	–	–	–	–	–	–	–	–
NEEMUCH (Mean strength, 288. Daily sick, 24.)	Admissions	615	–	243	7	8	8	8	23	1	99
	Deaths	5	–	2	–	–	–	–	2	–	–
	Ratio per mille.										
	Admissions	2135·4	–	843·7	24·3	27·8	27·8	27·8	79·8	3·5	343·7
	Deaths	17·4	–	6·9	–	–	–	–	6·9	–	–
NUSEERABAD (Mean strength, 967. Daily sick, 50.)	Admissions	1,306	–	352	37	56	14	4	47	12	283
	Deaths	6	–	–	1	–	–	–	1	–	–
	Ratio per mille.										
	Admissions	1350·6	–	364·0	38·3	57·9	14·5	4·1	48·6	12·4	292·7
	Deaths	6·2	–	–	1·0	–	–	–	1·0	–	–
AJMERE (Mean strength, 54. Daily sick, 1.)	Admissions	61	–	11	2	7	1	–	1	–	18
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1129·6	–	203·7	37·0	129·6	18·5	–	18·5	–	333·3
	Deaths	–	–	–	–	–	–	–	–	–	–

IX.—Northern Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Mean strength, 1,213. Daily sick, 106.)	Admissions	1,767	–	686	15	87	9	22	25	1	230
	Deaths	15	–	5	–	–	–	2	1	–	1
	Ratio per mille.										
	Admissions	1456·7	–	565·5	12·4	71·7	7·4	18·1	20·6	0·8	189·6
	Deaths	12·4	–	4·1	–	–	–	1·6	0·8	–	0·8
DHOLIAKOTE (Mean strength, 2. Daily sick, 0.)	Admissions	1	–	–	–	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	500·0	–	–	–	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–

IX.—Northern Division—*continued.*

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
MOUNT ABOO (Mean Strength, 118. Daily Sick, 5.)	Admissions	203	–	88	4	11	–	8	4	–	16
	Deaths	2	–	1	–	–	–	–	–	–	1
	Ratio per mille.										
	Admissions	1,720·3	–	745·8	33·9	93·2	–	67·8	33·9	–	135·6
	Deaths	16·9	–	8·5	–	–	–	–	–	–	8·5
DEESA (Mean Strength, 812. Daily Sick, 46.)	Admissions	1,140	–	513	3	61	6	12	8	–	161
	Deaths	11	–	3	–	–	–	2	1	–	–
	Ratio per mille.										
	Admissions	1,404·1	–	631·8	3·7	75·1	7·4	14·8	9·8	–	198·2
	Deaths	13·5	–	3·7	–	–	–	2·5	1·2	–	–
AHMEDABAD (Mean Strength, 257. Daily Sick, 54.)	Admissions	403	–	78	8	15	3	2	12	1	52
	Deaths	2	–	1	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,568·1	–	303·5	31·1	58·4	11·7	7·8	46·7	3·9	202·3
	Deaths	7·8	–	3·9	–	–	–	–	–	–	–
BARODA (Mean Strength, 24. Daily Sick, 1.)	Admissions	20	–	7	–	–	–	–	1	–	1
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	833·3	–	291·7	–	–	–	–	41·7	–	41·7
	Deaths	–	–	–	–	–	–	–	–	–	–

X.—Sind Division.

DIVISION (Mean Strength, 1,365. Daily Sick, 65.)	Admissions	1,401	–	361	20	55	36	13	44	1	228
	Deaths	15	–	1	1	–	–	1	1	–	–
	Ratio per mille.										
	Admissions	1,026·4	–	264·5	14·7	40·3	26·4	9·5	32·2	0·7	167·0
	Deaths	11·0	–	0·7	0·7	–	–	0·7	0·7	–	–
KURACHEE (Mean Strength, 969. Daily Sick, 55.)	Admissions	1,060	–	282	17	34	26	10	37	1	185
	Deaths	3	–	–	–	–	–	1	–	–	–
	Ratio per mille.										
	Admissions	1,093·9	–	291·0	17·5	35·1	26·8	10·3	38·2	1·0	190·9
	Deaths	3·1	–	–	–	–	–	1·0	–	–	–
HYDERABAD (Mean Strength, 396. Daily Sick, 10.)	Admissions	341	–	79	3	21	10	3	7	–	43
	Deaths	12	–	1	1	–	–	–	1	–	–
	Ratio per mille.										
	Admissions	861·1	–	199·5	7·6	53·0	25·3	7·6	17·7	–	108·6
	Deaths	0·3	–	2·5	2·5	–	–	–	2·5	–	–

XI.—Bombay Brigade.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
BRIGADE (Mean Strength, 502. Daily Sick, 15.)	Admissions	493	–	133	26	55	6	8	24	–	48
	Deaths	12	–	1	2	–	–	3	2	–	–
	Ratio per mille.										
	Admissions	982·1	–	264·9	51·8	109·5	12·0	15·9	47·8	–	95·6
	Deaths	23·9	–	2·0	4·0	–	–	6·0	4·0	–	–
BOMBAY (Mean Strength, 437. Daily Sick, 13.)	Admissions	385	–	122	21	14	5	7	13	–	46
	Deaths	–	–	1	1	–	–	3	–	–	–
	Ratio per mille.										
	Admissions	881·0	–	279·2	48·1	32·0	11·4	16·0	29·7	–	105·3
	Deaths	18·3	–	2·3	2·3	–	–	6·9	–	–	–
KHANDALA (Mean Strength, 65. Daily Sick, 2.)	Admissions	108	–	11	5	41	1	1	11	–	2
	Deaths	4	–	–	1	–	–	–	2	–	–
	Ratio per mille.										
	Admissions	1,661·5	–	169·2	76·9	630·7	15·4	15·4	169·2	–	30·8
	Deaths	61·5	–	–	15·4	–	–	–	30·8	–	–

XII.—Belgaum Brigade.

BELGAUM (Mean Strength, 1,027. Daily Sick, 71.)	Admissions	1,235	–	190	51	127	12	5	22	–	461
	Deaths	10	–	1	2	–	–	–	2	–	–
	Ratio per mille.										
	Admissions	1,202·5	–	178·9	49·7	123·7	11·7	4·9	21·4	–	448·9
	Deaths	9·2	–	1·0	1·9	–	–	–	1·9	–	–

XIII.—Aden Brigade.

BRIGADE (Mean Strength, 674. Daily Sick, 26.)	Admissions	618	–	93	3	85	16	4	30	2	115
	Deaths	10	–	3	–	–	–	–	1	–	1
	Ratio per mille.										
	Admissions	916·9	–	138·0	4·4	126·1	23·7	5·9	44·5	3·0	170·6
	Deaths	14·8	–	4·4	–	–	–	–	1·5	–	1·5
ADEN (Mean Strength, 668. Daily Sick, 26.)	Admissions	613	–	93	3	83	16	4	30	2	115
	Deaths	10	–	3	–	–	–	–	1	–	1
	Ratio per mille.										
	Admissions	917·7	–	139·2	4·5	124·2	24·0	6·0	44·9	3·0	172·1
	Deaths	15·0	–	4·5	–	–	–	–	1·5	–	1·5
FIELD FORCE (Mean Strength, 6. Daily Sick, 0.)	Admissions	5	–	–	–	2	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	833·3	–	–	–	333·3	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–

XIV.—Invalids and Convalescents at Sanitaria and Depôts.

		All Classes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
TOTAL INVALIDS AND CONVALESCENTS	Admissions	862	–	156	16	29	17	58	78	1	105
	Deaths	16	–	–	4	–	–	6	2	–	–
(Mean strength, 327. Daily sick, 62.)	*Ratio per mille.*										
	Admissions	2,636·1	–	477·1	48·9	88·7	52·0	177·4	238·5	3·0	321·1
	Deaths	48·9	–	–	12·2	–	–	18·3	6·1	–	–
OLABA	Admissions	173	–	19	9	10	4	14	18	–	23
	Deaths	4	–	–	–	–	–	3	–	–	–
(Mean strength, 29. Daily sick, 12.)	*Ratio per mille.*										
	Admissions	5,965·5	–	655·2	310·3	344·8	137·9	282·7	620·7	–	793·1
	Deaths	137·9	–	–	–	–	–	103·4	–	–	–
POONA	Admissions	160	–	22	1	–	–	0	17	–	21
	Deaths	5	–	–	2	–	–	1	2	–	–
(Mean strength, 46. Daily sick, 8.)	*Ratio per mille.*										
	Admissions	3,478·3	–	478·3	21·7	–	–	434·8	369·6	–	456·5
	Deaths	108·7	–	–	43·5	–	–	21·7	43·5	–	–
POORUNDHUR	Admissions	267	–	76	2	8	–	3	25	–	30
	Deaths	1	–	–	1	–	–	–	–	–	–
(Mean strength, 104. Daily sick, 12.)	*Ratio per mille.*										
	Admissions	2,567·3	–	429·9	19·2	76·9	–	28·8	240·4	–	288·5
	Deaths	9·6	–	–	9·6	–	–	–	–	–	–
KHANDALLA	Admissions	21	–	2	–	4	–	–	1	–	1
	Deaths	1	–	–	–	–	–	–	–	–	–
(Mean strength, 7. Daily sick, 0.)	*Ratio per mille.*										
	Admissions	3,000·0	–	285·7	–	571·4	–	–	142·9	–	142·9
	Deaths	142·9	–	–	–	–	–	–	–	–	–
SULABUT KHAN'S TOMB	Admissions	–	–	–	–	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
(Mean strength, 14. Daily sick, 0.)	*Ratio per mille.*										
	Admissions	–	–	–	–	–	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
MOUNT ABOO	Admissions	44	–	9	–	2	–	2	4	–	5
	Deaths	1	–	–	–	–	–	–	–	–	–
(Mean strength, 23. Daily sick, 3.)	*Ratio per mille.*										
	Admissions	1,913·0	–	391·3	–	86·9	–	86·9	173·9	–	217·4
	Deaths	43·5	–	–	–	–	–	–	–	–	–
KURACHEE	Admissions	15	–	12	–	–	1	2	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
(Mean strength, 6. Daily sick, 1.)	*Ratio per mille.*										
	Admissions	2,500·0	–	2,000·0	–	–	166·7	333·3	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
GHIZREE	Admissions	112	–	5	2	3	12	14	7	–	10
	Deaths	3	–	–	–	–	–	2		–	–
(Mean strength, 74. Daily sick, 17.)	*Ratio per mille.*										
	Admissions	1,513·5	–	67·5	27·0	40·5	162·2	189·2	94·6	–	135·1
	Deaths	40·5	–	–	–	–	–	27·0	–	–	–

XIV.—Invalids and Convalescents at Sanitaria and Depots—*continued.*

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
TEETHUL. (Mean Strength, 7. Daily Sick, 1.)	Admissions	25	–	3	1	–	–	1	2	–	2
	Deaths	1	–	–	1	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	3,571·4	–	428·6	142·8	–	–	142·8	285·7	–	285·7
	Deaths	142·8	–	–	142·8	–	–	–	–	–	–
TARAGHUR (Mean Strength, 17. Daily Sick, 8.)	Admissions	45	–	8	1	2	–	2	4	1	13
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	2,647·1	–	470·6	58·8	117·6	–	117·6	235·3	58·8	764·7
	Deaths	–	–	–	–	–	–	–	–	–	–

XV.—Effectives Marching.

(Mean Strength, 261. Daily Sick, 6.)	Admissions	243	–	69	9	15	1	3	3	–	25
	Deaths	3	–	1	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	920·5	–	261·4	34·1	56·8	3·4	11·4	11·4	–	94·7
	Deaths	11·4	–	3·4	–	–	–	–	–	–	–

XVI.—Invalids and Convalescents Marching.

(Mean Strength, 24. Daily Sick, 4.)	Admissions	13	–	2	–	1	–	2	1	–	1
	Deaths	3	–	1	–	–	–	2	–	–	–
	Ratio per mille.										
	Admissions	541·7	–	83·3	–	41·7	–	83·3	41·7	–	41·7
	Deaths	125·0	–	41·7	–	–	–	83·3	–	–	–

XVII.—Stations, arranged in Order of the highest Ratios of Sickness and Mortality among the Troops during the Year 1866.

Average Strength.	SICKNESS. Name.	Per Mille.	Average Strength.	MORTALITY. Name.	Per Mille.
288	Neemuch	2,135·4	65	Khandalla	61·5
468	Kirkee	1,812·0	396	Hydrabad	30·3
2,210	Poona	1,723·5	437	Bombay	18·3
118	Mount Aboo	1,720·3	288	Neemuch	17·3
65	Khandalla	1,661·5	118	Mount Aboo	16·9
1,415	Mhow	1,590·1	2,210	Poona	14·9
257	Ahmedabad	1,568·1	668	Aden	14·9
132	Sholapore	1,454·5	812	Deesa	13·5
812	Deesa	1,403·9	530	Ahmednugur	11·3
967	Nuseerabad	1,350·5	468	Kirkee	10·7
530	Ahmednugur	1,288·7	98	Aseerghur	10·2
227	Sattara	1,237·8	1,027	Belgaum	9·7
1,027	Belgaum	1,202·5	1,415	Mhow	7·8
54	Ajmere	1,129·6	257	Ahmedabad	7·8
969	Kurachee	1,093·9	132	Sholapore	7·6
86	Indore	1,046·3	967	Nuseerabad	6·2
98	Aseerghur	1,020·4	227	Satara	4·4
5	Poorundhur	1,000·0	969	Kurachee	3·1
668	Aden	917·7			
437	Bombay	881·0			
396	Hydrabad	861·1			
24	Baroda	833·3			
6	Field Force	833·3			
2	Dhooliakote	500·0			
175	Maunderdeo	72·0			

NATIVE TROOPS.

Lines.

It was brought to the notice of Government that the want of drainage in the lines of Native regiments was a source not only of much discomfort, but of unwholesomeness, and an order of Government directed that estimates for the work, as recommended, should be submitted. Drainage.

Latrines.

As the habits of Natives are not consistent with the adoption of the system of dry-earth conservancy, a modification of Macfarlane's patent water latrine was proposed, for use by natives, and Government procured from England several such latrines, which have been allocated to the Marine Battalion lines, Bombay, and the Sudur Bazaar, Poona. It is believed that as yet these latrines are not in use. Design.

A standard plan of latrine for Natives, modified from the one issued by the Quartermaster General, was prepared. Standard plan.

The want of latrine accommodation for Native regiments has in some places been supplied, and there is a prospect of it being so in all. Accommodation.

Hospitals.

Principles to be followed in the construction of Native hospitals have been published by the Government of India for guidance. (Appendix.) Construction.

The provision of houses for the Native establishments of the hospitals of Native troops has been sanctiond, and a standard plan has been issued. Hospital servants.

STATISTICAL.

The strength of the Native Army on the 1st day of January 1867 was 25,536, being an increase of four men on the number of the 1st January 1866. After deducting the 633 men removed from the influences affecting military life by causes other than those pertaining to health, a mortality of 8·8 and invaliding to the extent of 34·4 per thousand men are exhibited. Increase and decrease.

The numbers invalided convey no information regarding the effects of service in the Army upon health, as they are probably mostly made up of men worn out by age.

The hospital returns, which deal only with men actually present with their regiments, show that about 37 in every thousand were constantly sick, and that 13 in every two thousand men died. Sickness and mortality.

There was little sickness from epidemic disease. Malarious fever was the cause of nearly half of the entire sickness, and a quarter of the entire mortality. Bowel affections were next most prevalent and fatal, but in a much smaller ratio. There were 21 cases of, and one death from, small-pox.

Poona.—Fever and dysentery prevailed to a considerable extent, but the mortality was very small.

Scarcity of water for the cavalry regiment is still felt at certain seasons, and the situation of the lines "to leeward of a nulla, and close to a half-dry river bed below a large city," is unfavourable to health.

A wing of the 7th regiment left the station for Aden in the end of October. The duty is reported to have been heavy in the 10th Regiment. The admissions from guinea-worm in it were less by one-half than in the preceding year. The 22nd Regiment suffered severely from fever in June and October. Water is now conveyed to the neighbourhood of the 22nd Regiment's lines by iron piping.

The latrine conservancy was not satisfactory.

Sholapore.—A relief of the infantry regiment took place in November from Bombay.

A few cases of cholera occurred, but the general health was good.

New lines were in progress of building on a site "at a much greater distance from the Sudur Bazaar than the present ones, which are situated almost in the bazaar." It is stated that "dry conservancy is the system employed."

Seroor.—The average strength of the troops was considerably less than in the preceding year. The general health was "excellent." There was no death.

Ahmednugur.—A relief of the regiment was effected from Rajkote.

Some cases of small-pox occurred in the lines of the 14th Regiment in December. The general health of the troops was satisfactory.

Malligaum.—There was a large decrease in sickness in all classes of disease as compared with the previous year. The men were in occupation of the lines recently built, which are well drained. The conservancy of the lines and of the station was carefully looked after.

Aseerghur.—There was a slight increase in sickness from fever as compared with the preceding year. There was no death.

The pendalls are reported to be "in a most dangerous state." In the monsoon one fell down, and 50 to 60 men were accommodated "within the precincts of the gaol."

The latrine arrangements and conveniences were not satisfactory, as the filth was thrown upon the "ramparts and cliffs," and "the most flagrant nuisances" existed. The hospital accommodation was unsuitable and inadequate. During the cleaning of the tank of silt the detachment was encamped at a distance for about a month in the cold weather. The European burial-ground is close to the lines and the tank, and it should be entirely closed, as a new cemetery is available.

Dhoolia.—The men were in occupation of new lines, and enjoyed excellent health. The sickness was less by more than one-third that of the previous year.

Manderdeo.—The Sappers and Miners, who were employed at this station during the first four months of the year, suffered in a large proportion from fever, especially in January. No death occurred.

Mhow.—The two Native Infantry regiments gave a detachment of 200 men to Indore, each for six months at a time. Considerable progress was made in the construction of new lines, but the work was necessarily slow owing to the detachment duty. There was a considerable increase of sickness from fever as compared with the previous year, but the mortality was much less.

Indore.—The lines were in very bad repair. The garrison consisted of 200 men detached from the regiments at Mhow, and was relieved after six months. The sickness was greater than in the preceding year, which is attributed to the debilitated state of the 15th Regiment after service in Aden. No improvement has taken place in the hospital accommodation.

Augur.—No special report has been received from this station. The sickness from fever was much greater than in the preceding year.

The garrison was relieved from Mehidpoor in March.

Mehidpoor.—There was a very high ratio of sickness from fever. The mortality was nil.

Moving the cantonment to a more eligible locality was in comtemplation.

Neemuch.—The infantry regiment was relieved from Mehidpoor in December.

The statistical returns indicate an amount of sickness much the same as in the preceding year. The death rate was very small, and the senior medical officer has reported that "the past has been the most healthy year I have known during a residence of four years." The cavalry regiment had been upwards of nine years at the station, and "during the past year has been remarkably healthy."

Nusseerabad.—There was greater sickness than in the preceding year, principally from the prevalence of fever. There were only two cases of scurvy, and the mortality was very small. One fatal case of cholera occurred.

Surat.

Surat.—The ratio of sickness at this station was very high, more than double that of the preceding year, fever being the most, and bowel affections the second most prevalent disease. The mortality was not above the average.

During the first half of the year, the men were employed in building lines, which is reported to have "told unfavourably on the health."

The regimental bazaar had been removed from the heart of the cantonment, and "the villages on the river bank between the Taptee and the lines are in course of removal." The ground between the hospital and lines was "rough and broken."

Broach.—The detachment at this station was small, and withdrawn altogether in November. The amount of sickness was large, and in excess of that in the preceding year.

Baroda.—A relief from Tanna and Kolapoor was effected in October and December.

The general health of the troops at the station was very good; the admissions from fever were much below the average. The lines are stated to be old, and cultivation is carried on close to them. In rear there is a brick-kiln where, all sorts of rubbish and filth are collected and burned. "Dry conservancy has been introduced (at the hospital) and answers the purpose well."

Ahmedabad.—One regiment arrived from Nuseerabad in January, and another left the station in November.

The general health of the troops was not so good as in the preceding year. Fever was much more prevalent. "Cholera appeared during the hot weather in a mild degree, and chiefly among the followers and bazaar people." One case occurred in a man of the 17th Regiment, and one death was occasioned by accident.

Deesa.—The Infantry regiment arrived from Ahmedabad early in the year. The general health of the troops was excellent. The health of the men of the Cavalry Regiment contrasted unfavourably with that of the men of the Infantry.

Rajkote.—The cavalry and infantry were relieved from Deesa and Bhooj in October, November, and December. Fever was very prevalent at the station, and the mortality was larger. There were two cases of cholera and twelve of scurvy.

Porebunder.—The small detachment at this post during September, October, and November seems to have suffered enormously from fever, and also in a considerable degree from bowel affections. There was no death. No special report has been received.

Dwarka.—Seven admissions and one death from scurvy occurred, and there existed a general scorbutic taint in the regiment, otherwise the health was satisfactory. Vegetables were very scarce; limejuice and *kokum* were issued to the men. New lines have been built which afford accommodation for a portion of the troops, the rest being comfortably lodged in a dhurmsala, and huts of temporary construction.

A new hospital with subsidiary buildings was provided.

In the latrine "the dry-earth system is carried out in its integrity, and with the most satisfactory result."

Bhooj.—A wing of the regiment left the station in October, and the other wing was relieved from Baroda in the end of December. There was much sickness, and two deaths from fever. The men of the relieved regiment are reported to have been much debilitated, as exemplified by the large numbers who fell out on the march. This is said to be attributable in a measure to the regiment not having had the benefit of the usual sojourn at Mandavee during the months of September and October. The relieving regiment arrived in a sickly condition, after a tedious march through a country badly supplied with water, but quickly recovered on obtaining rest.

Burda Chowkee.—No special report has been received, but the returns show that the detachment had been very sickly. The admissions from fever alone had been nearly six times the average strength, and bowel affections were likewise prevalent.

There were five cases of cholera, of which four proved fatal.

In September, October, and November the detachment was at Porebunder.

Kurachee.—Fever was more prevalent than in the previous year, but considerably below the average; and the health of the regiment was generally very satisfactory. There was one case of cholera.

It was thought that the cesspits in the lines had been abolished, but it was discovered at the very end of the year that they still existed, and that the only openings from them were in the interior of the huts.

A case of "typhus fever" was admitted into hospital from one of these huts. There was no provision for drainage of the lines.

The latrines were very obnoxious; the liquid from the adjoining cesspools was used for cleansing (?) purposes. A special report is printed in the Appendix.

Hyderabad.—The health of the Native troops was excellent. Fever prevailed in a comparatively small ratio. "Immediately beneath and to the south-west of the fort is a large pond of water, which might more properly be described as an open cesspool." Insufficient water-supply is one of the greatest sanitary evils connected with the station.

Jacobabad.—The proportion of sickness was very high—much greater than in the preceding year. Fever prevailed to an extent double the average ratio. The mortality too was above the average. The 1st Regiment of Sind Horse has for long been much more sickly than any of the others. The medical officer thinks this is probably owing to the greater number of old men in it. The men on out-post duty were accommodated in tents or huts.

Bombay.—One regiment was relieved from Sholapoor in November; detachments from two other regiments formed part of the garrison for short periods of the year.

The proportion of sickness from all diseases was considerably less than that of the preceding year. The mortality was more than double the average; there were 13 deaths from fever, and two from scurvy, which prevailed to a large extent.

The conservancy of the Marine Battalion lines had undergone much improvement; and considerable alterations, which had been recommended by the Commission, and would "greatly improve the condition of the men," were in progress at the end of the year. The work of reclamation in Back Bay had been carried on without regard to the existing drainage system, which resulted in causing intolerable nuisance in the neighbourhood; steps were taken to remedy this.

The foul shore near Boree Bunder, and the nuisance occasioned in the Native Infantry lines there from the loading of railway trucks with the town sweepings at a platform close to the lines, were subjects of complaint; and it was represented to Government that the location of the Native Infantry both in the Marine and Boree Bunder lines was most unwholesome.

Tanna.—The troops were relieved from Bombay and Malligaum in October. The general health was very good. Bowel affections prevailed in a high ratio, as they did also in the preceding year. A few cases of cholera occurred among the families of the men in August.

Latrines had been erected, but were not used, owing to want of a conservancy establishment. No change had been made in the lines.

The subject of a site for new lines was reported on.

Kolhapoor.—No special report has been received. The regiment was relieved at the end of the year from Ahmedabad. The general health was very satisfactory.

Kulludghee.—No special report has been received. There was no death, and the general health was excellent.

Belgaum.—One regiment was relieved in the end of the year from Aden. The general health was good; the number of cases of fever was slightly under the average. Bowel affections prevailed above the average.

The lines of one of the Native regiments were in a very dilapidated state, and new ones were about to be built.

Hospital wards for infectious diseases are reported to be much required.

Dharwar.—

Dharwar.—The general health was excellent. There were five deaths, one of which was from cholera.

The lines are too near the town, and the floors of the huts are damp, owing, it is said, to the sites being excavated. A scarcity of water and of good grain at one time existed, and was greatly felt towards the end of the hot season. There were nine cases of scurvy.

Aden.—The regiment was relieved from Poona in November. The sickness throughout the year was comparatively small; there were only 24 cases of scurvy; 119 was the number in the preceding year in an average strength of nine fewer men. No mention is made in the medical officer's report of the *kokum* ration ordered for the troops at Aden in the end of 1865. The ratio of mortality was high. It was stated, in reply to a reference on the point, that it was highly advisable that the tour of duty at Aden should be reduced from three to two years, and that on return to India the regiment should be sent to a station in the Dukhun or the southern Muratha country, Bombay not being suitable owing to the dearness of provisions, and the Rajpootana, Khandeish, Kutch, Katiwar, the more inland of the Northern Division, and the Sind stations, owing to scarcity of vegetables and fruit.

A representation was made regarding delay in the transfer of sick native soldiers to India, when such change is considered essential to their recovery.

There is reason to believe that on board some steamers due provision is not made for the comfort of sick native soldiers. One case came casually to notice where the individual crawled out of the way into a compartment of a sheep-pen, in which he was separated from the animals in another compartment of the pen only by iron bars. This man died before the termination of the voyage.

Perim.—No special report has been received. There was only one death. The sickness was considerably less than in the preceding year, yet was large. There were 19 admissions from bowel affections and 26 from scurvy in an average strength of 66. It is presumed that the detachment was relieved every two months from Aden, as in the previous year.

XVIII.—STATEMENT showing the Increase and Decrease in the Native Army from 1 January to 31 December 1866.

Poona, 1 January 1867.

Strength on 1 January 1866		25,532
Increase.		
By recruiting	1,711	
„ Boys taken on effective strength	82	
		1,793
TOTAL		27,325
Decrease.		
By Deaths	236	
„ Invaliding	920	
„ Summary dismissal and desertion	633	
		1,789
Strength on 1 January 1867		*25,536

Artillery	259
Artillery Store Lascars	262
Sappers and Miners	565
Staff and guides attached to Sind horse	315
Cavalry	3,555
Infantry	20,580
	*25,536

XIX.—Sickness and Mortality among Native Troops.

Year.	Mean Strength from Monthly Returns.	Admissions into Hospital.	Daily Sick.	Deaths in Hospital.	Invalided to be Discharged.	Ratio to Strength per Mil e.			
						Admissions.	Daily Sick.	Deaths in Hospital.	Invalided.
1866 - - -	24,451	28,769	902·6	162	-	1,176·6	36·9	6·6	—

XX.—Sickness and Mortality from Classes of Disease.

	Zymotic.	Cachectic.	Local.	Develop-mental.	Violence.
Admissions - - - - - - - -	20,802	127	4,775	34	3,031
Deaths - - - - - - - -	83	10	60	5	4
Ratio per mille.					
Admissions - - - - - - - -	850·8	5·2	195·3	1·4	12·4
Deaths - - - - - - - -	3·4	·4	2·5	·2	·2

XXI.—Sickness and Mortality from Orders of Disease.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of each to all per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Miasmatic Disease - - - - -	19,267	77	788	3·1	67	47·5
Enthetic ,, - - - - - -	659	-	2·7	-	2·3	-
Dietetic ,, - - - - - -	231	6	9·4	·2	0·8	3·7
Parasitic ,, - - - - - -	645	-	26·4	-	2·2	-
Diathetic ,, - - - - - -	90	4	3·7	·2	0·3	2·5
Phthisic ,, - - - - - -	37	6	1·5	·2	0·1	3·7
Disease of Nervous System - - - -	509	4	20·8	·2	1·8	2·5
,, Circulatory - - - -	23	7	·9	·3	0·1	4·3
,, Respiratory - - - -	499	27	20·4	1·1	1·7	16·7
,, Digestive - - - - -	1,201	21	49·1	·9	4·2	13·0
,, Urinary - - - - -	26	-	1·1	-	0·1	-
,, Reproductive - - - -	109	-	4·5	-	0·4	-
,, Locomotive - - - -	34	-	1·4	-	0·1	-
,, Tegumentary - - - -	2,374	1	97·1	-	8·3	0·6
Atrophic - - - - - -	34	5	1 4	·2	0·1	3·1
Violence Accidental - - - - -	3,019	4	123·5	·2	10·5	2·5
Battle - - - - - - -	-	-	-	-	-	-
Homicide - - - - - - -	2	-	·1	-	-	-
Suicide - - - - - - -	1	-	-	-	-	-
Punishment - - - - - - -	9	-	·4	-	-	-

XXII.—Sickness and Mortality from Various Disease.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of each to all per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Cholera - - - - - - -	16	9	·7	·4	0·1	5·6
Small-pox - - - - - - -	21	1	·9	-	0·1	0·6
Measles - - - - - - -	29	-	1·2	-	0·1	-
Dysentery - - - - - - -	501	10	20·5	·4	1·7	6·2
Diarrhœa - - - - - - -	735	6	30·1	·2	2·6	3·7
Fever, remittent and intermittent - - -	13,594	39	55·6	1·2	47·3	24·1
Fever of other type - - - - -	1,229	5	50·3	·2	4·3	3·1
Scorbutus and Purpura - - - - -	216	6	8·8	·2	0·8	3·7
Delirium Tremens - - - - -	3	-	·1	-	-	-
Ebriositas - - - - - - -	3	-	·1	-	-	-
Hydatid - - - - - - -	-	-	-	-	-	-
Vermes - - - - - - -	-	-	-	-	-	-
Phthisis Pulmonalis - - - - -	25	6	1·0	·2	0·1	3·7
Hepatitis - - - - - - -	55	5	2·2	·2	0·2	3·1
Icterus - - - - - - -	33	1	1·4	-	0·1	0·6
Spleen - - - - - - -	108	2	4·4	·1	0·4	1·2
All other causes - - - - - -	12,201	72	499·	2·9	42·4	44·4

XXIII.—Poona Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Average strength, 5,961. Daily sick, 199·4.)	Admissions	6,380	3	2,943	115	158	24	8	18	7	191
	Deaths	23	1	6	3	2	–	–	2	1	–
	Ratio per mille.										
	Admissions	1,070·3	·5	493·7	19·3	26·5	4·0	1·3	3·0	1·2	3·20
	Deaths	3·9	·2	1·0	·5	·3	–	–	·3	·2	–
KIRKEE (Average strength, 126. Daily sick, 3·3.)	Admissions	152	–	78	8	4	–	1	2	2	7
	Deaths	1	–	–	–	–	–	–	1	–	–
	Ratio per mille.										
	Admissions	1,206·3	–	619·0	63·5	31·7	–	7·9	15·8	15·8	55·6
	Deaths	7·9	–	–	–	–	–	–	7·9	–	–
POONA (Average strength, 2,693. Daily sick, 123·9.)	Admissions	3,730	–	1,784	39	88	13	5	9	2	122
	Deaths	9	–	3	–	–	–	–	1	1	–
	Ratio per mille.										
	Admissions	1,385·1	–	662·5	145	32·7	4·8	1·9	3·3	·7	45·3
	Deaths	3·3	–	1·1	–	–	–	–	0·4	0·4	–
MAUNDERDEO (Average strength, 93. Daily sick, 4·2.)	Admissions	160	–	73	5	1	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,720·4	–	784·9	53·8	10·8	–	–	–	–	64·5
	Deaths	–	–	–	–	–	–	–	–	–	–
SHOLAPOOR (Average strength, 722. Daily sick, 14·5.)	Admissions	460	3	235	23	17	1	–	1	–	12
	Deaths	8	1	2	2	2	–	–	–	–	–
	Ratio per mille.										
	Admissions	637·1	4·2	325·5	31·9	23·5	1·4	–	1·4	–	16·6
	Deaths	11·1	1·4	2·8	2·8	2·8	–	–	–	–	–
SEROOR (Average strength, 194. Daily sick, 2·6.)	Admissions	75	–	30	1	–	–	–	–	–	5
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	386·6	–	154·6	5·2	–	–	–	–	–	25·8
	Deaths	–	–	–	–	–	–	–	–	–	–
AHMEDNUGGUR (Average strength, 720. Daily sick, 21·6.)	Admissions	664	–	283	17	14	2	–	5	1	21
	Deaths	2	–	1	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	922·2	–	393·1	23·6	19·4	2·8	–	6·9	1·4	29·2
	Deaths	2·8	–	1·4	–	–	–	–	–	–	–
MALIGAUM (Average strength, 570. Daily sick, 9·2.)	Admissions	410	–	122	10	9	3	–	1	–	5
	Deaths	2	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	719·3	–	214	17·5	15·8	5·2	–	1·8	–	8·7
	Deaths	3·5	–	–	–	–	–	–	–	–	–
ASEERGHUR (Average strength, 172. Daily sick, 4·8.)	Admissions	151	–	90	2	9	–	–	–	–	2
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	877·9	–	523·2	11·6	52·3	–	–	–	–	116
	Deaths	–	–	–	–	–	–	–	–	–	–
DHOOLIA (Average strength, 671. Daily sick, 15·3.)	Admissions	578	–	248	10	16	5	2	–	2	11
	Deaths	1	–	–	1	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	861·4	–	369·6	14·8	23·8	7·5	3·0	–	3·0	16·4
	Deaths	1·5	–	–	1·5	–	–	–	–	–	–

XXIV.—Mhow Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Average strength, 3,633. Daily sick, 121·4.)	Admissions	3,805	1	2,124	37	61	12	3	5	8	87
	Deaths	15	1	3	1	1	–	1	–	–	–
	Ratio per mille.										
	Admissions	1,050·2	0·4	586·3	10·2	16·8	3·3	0·8	1·4	2·2	24·0
	Deaths	4·1	0·4	0·8	0·4	–	–	0·4	–	–	–
MHOW (Average strength, 1,047. Daily sick, 56·8.)	Admissions	1,265	–	664	9	14	7	2	2	8	26
	Deaths	8	–	2	1	1	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,208·2	–	634·2	8·6	13·4	6·7	1·9	1·9	7·6	24·8
	Deaths	7·6	–	1·9	1·0	1·0	–	–	–	–	–
INDORE (Average strength, 221. Daily sick, 7·4.)	Admissions	199	–	98	3	3	1	–	–	–	4
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	900·4	–	443·4	13·6	13·6	4·5	–	–	–	18·1
	Deaths	–	–	–	–	–	–	–	–	–	–
AUGUR (Average strength, 248. Daily sick, 7.	Admissions	231	–	114	2	6	2	–	–	–	10
	Deaths	1	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	931·4	–	459·7	8·1	24·2	8·1	–	–	–	40·3
	Deaths	4·	–	–	–	–	–	–	–	–	–
MEHIDPOOR (Average strength, 380. Daily sick, 5·4.)	Admissions	345	–	247	1	4	–	–	–	–	1
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	907·9	–	650·	2·6	10·5	–	–	–	–	2·6
	Deaths	–	–	–	–	–	–	–	–	–	–
NEEMUCH (Average strength, 854. Daily sick, 23·3.)	Admissions	866	–	567	19	9	–	–	1	–	24
	Deaths	2	–	1	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,014·1	–	663·9	22·2	10·5	–	–	1·2	–	28·1
	Deaths	2·3	–	1·2	–	–	–	–	–	–	–
NUSEERABAD (Average strength, 873. Daily sick, 21·5.)	Admissions	899	1	434	3	25	2	1	2	–	22
	Deaths	4	1	–	–	–	–	1	–	–	–
	Ratio per mille.										
	Admissions	1,029·8	1·1	497·1	3·4	28·6	2·3	1·1	2·3	–	25·2
	Deaths	4·6	1·1	–	–	–	–	1·1	–	–	–

XXV.—Northern Division.

DIVISION (Average strength, 5,558. Daily sick, 208·1.)	Admissions	7,747	9	4,264	141	211	48	5	15	16	106
	Deaths	45	6	11	3	2	2	1	1	1	–
	Ratio per mille.										
	Admissions	1,393·8	1·6	767·2	25·4	38·	8·6	0·9	2·7	2·9	191·
	Deaths	8·1	1·1	2·0	·5	·4	·4	·2	·2	·2	–
SURAT (Average strength, 629. Daily sick, 33·1.)	Admissions	1,400	–	732	47	69	2	–	2	–	10
	Deaths	4	–	1	–	–	–	–	1	–	–
	Ratio per mille.										
	Admissions	2,225·8	–	1,163·8	74·7	109·7	32	–	3·2	–	15·9
	Deaths	6·4	–	1·6	–	–	–	–	1·6	–	–

XXV.—Northern Division—*continued.*

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
BROACH	Admissions	89	–	49	2	5	1	–	–	–	1
(Average strength, 49. Daily sick, 1·5)	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,816·3	–	1,000·0	40·8	102·	20·4	–	–	–	20·4
	Deaths	–	–	–	–	–	–	–	–	–	–
BARODA	Admissions	494	–	160	14	17	2	–	2	–	16
(Average Strength, 577. Daily sick, 12·9.)	Deaths	3	–	1	2	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	856·2	–	277·3	24·3	29·4	3·5	–	3·5	–	27·7
	Deaths	5·2	–	1·7	3·5	–	–	–	–	–	–
AHMEDABAD	Admissions	1,040	1	508	19	36	–	3	2	–	22
(Average strength, 1,228. Daily sick, 32·5.)	Deaths	11	1	2	–	1	–	1	–	–	–
	Ratio per mille.										
	Admissions	846·9	0·8	413·7	15·5	21·2	–	2·4	1·6	–	17·9
	Deaths	9·0	0·8	1·6	–	0·8	–	0·8	–	–	–
DEESA	Admissions	827	–	285	14	34	3	–	3	2	27
(Average strength, 920. Daily sick, 20·5.)	Deaths	2	–	2	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	898·9	–	309·8	15·2	37	3·3	–	3·3	2·2	29·3
	Deaths	2·2	–	22	–	–	–	–	–	–	–
SADRA (Outpost)	Admissions	61	1	27	1	3	–	–	–	–	–
(Average strength, 81. Daily sick, 1·8.)	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	753·1	12·3	333·3	12·3	37·0	–	–	–	–	–
	Deaths	–	–	–	–	–	–	–	–	–	–
RAJKOTE	Admissions	1,038	2	579	5	18	12	1	2	6	14
(Average strength, 717. Daily sick, 28·1.)	Deaths	8	1	1	–	1	–	–	–	1	–
	Ratio per mille.										
	Admissions	1,447·7	2·8	807·5	7·0	25·1	16·7	1·4	2·8	8·4	19·5
	Deaths	11·2	1·4	1·4	–	1·4	–	–	–	1·4	–
POREBUNDER (Field Force)	Admissions	238	–	207	2	3	–	–	–	3	–
(Average strength, 54. Daily sick, 7·2.)	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	4,407·4	–	3,833·3	37	55·6	–	–	–	55·6	–
	Deaths	–	–	–	–	–	–	–	–	–	–
DWARKA	Admissions	623	–	242	7	14	7	1	3	3	4
(Average strength, 510. Daily sick, 18·6.)	Deaths	5	–	1	–	–	1	–	–	–	–
	Ratio per mille.										
	Admissions	1,221·6	–	474·5	13·7	27·4	33·3	2	5·9	5·9	7·9
	Deaths	9·8	–	2·0	–	–	2·0	–	–	–	–
BHOOJ	Admissions	713	–	390	15	5	7	–	1	1	11
(Average strength, 577. Daily sick, 21·8.)	Deaths	5	–	2	–	–	1	–	–	–	–
	Ratio per mille.										
	Admissions	1,235·6	–	675·9	26	8·7	12·1	–	1·7	1·7	19·1
	Deaths	8·7	–	3·5	–	–	1·7	–	–	–	–
BURDA CHOWKEE	Admissions	1,224	5	1,085	15	7	4	–	–	1	1
(Average strength, 216. Daily sick, 30·1.)	Deaths	7	4	1	1	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	5,666·6	23·1	5,023·1	69·4	32·4	18·5	–	–	4·6	4·6
	Deaths	32·4	18·5	4·6	4·6	–	–	–	–	–	–

XXVI.—Sind Division.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION (Average strength, 3,487. Daily sick, 159·8)	Admissions	5,294	1	3,140	84	81	11	10	30	73	141
	Deaths	26	–	5	1	–	–	2	1	–	–
	Ratio per mille.										
	Admissions	1,518·2	0·3	900·4	24·1	23·2	3·2	2·9	8·6	20·9	40·4
	Deaths	7·5	–	1·4	0·3	–	–	0·6	0·3	–	–
KURACHEE (Average strength, 661. Daily sick, 16·5.)	Admissions	489	1	196	9	4	2	2	–	–	55
	Deaths	3	–	1	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	739·6	1·5	296·5	13·6	6·1	3·0	3·0	–	–	83·2
	Deaths	4·5	–	1·5	–	–	–	–	–	–	–
HYDERABAD (Average strength, 622. Daily sick, 17·2.)	Admissions	274	–	104	7	5	1	2	–	–	42
	Deaths	4	–	1	–	–	–	1	–	–	–
	Ratio per mille.										
	Admissions	440·5	–	167·2	11·3	8·0	1·6	3·2	–	–	67·5
	Deaths	6·4	–	1·6	–	–	–	1·6	–	–	–
JACOBABAD (Average strength, 2,204. Daily sick, 126·1.)	Admissions	4,531	–	2,840	68	72	8	6	30	73	44
	Deaths	19	–	3	1	–	–	1	1	–	–
	Ratio per mille.										
	Admissions	2,055·8	–	1,288·6	30·9	32·7	3·6	2·7	13·6	33·1	20
	Deaths	8·6	–	1·4	0·5	–	–	0·5	0·5	–	–

XXVII.—Bombay Brigade.

BRIGADE (Average strength, 2,070. Daily sick, 78·4.)	Admissions	2,221	–	1,109	42	119	70	2	2	1	28
	Deaths	25	–	13	2	1	2	–	–	–	–
	Ratio per mille.										
	Admissions	1,072·9	–	536·2	20·2	57·5	33·8	1·	1·	0·5	13·5
	Deaths	12·1	–	6·3	1·	0·5	1·	–	–	–	–
BOMBAY (Average strength, 1,763. Daily sick, 72.)	Admissions	1,988	–	1,011	26	105	69	1	2	1	27
	Deaths	24	–	13	2	1	2	–	–	–	–
	Ratio per mille.										
	Admissions	1,127·6	–	573·4	14·7	59·6	39·1	·6	1·1	·6	15·3
	Deaths	13·6	–	7·4	11·1	·6	1·1	–	–	–	–
TANNA (Average strength, 307. Daily sick, 6·4.)	Admissions	233	–	98	16	14	1	1	–	–	1
	Deaths	1	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	759·0	–	319·2	52·1	45·6	3·3	3·3	–	–	3·3
	Deaths	3·3	–	–	–	–	–	–	–	–	–

XXVIII.—Belgaum Brigade.

BRIGADE (Average strength, 2,446. Daily sick, 76·5.)	Admissions	1,957	2	788	50	48	13	6	5	–	68
	Deaths	14	1	3	–	–	1	1	–	–	–
	Ratio per mille.										
	Admissions	800·1	0·8	322·6	00·9	19·6	5·3	2·5	2·0	–	27·8
	Deaths	5·7	·4	1·2	–	–	·4	·4	–	–	–

XXVIII.—Belgaum Brigade—*continued.*

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Eathetic Disease.
KOLAPOOR (Average strength, 336. Daily sick, 14·4.)	Admissions	190	1	53	9	3	1	3	–	–	8
	Deaths	2	–	–	–	–	–	1	–	–	–
	Ratio per mille.										
	Admissions	565·4	3·	157·7	26·8	8·9	3·	8·9	–	–	23·8
	Deaths	6·	–	–	–	–	–	3·	–	–	–
KULUDGHEE (Average strength, 137. Daily sick, 2·9.)	Admissions	76	–	20	4	3	–	–	–	–	10
	Deaths	–	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	554·7	–	146·	29·2	21·9	–	–	–	–	73·
	Deaths	–	–	–	–	–	–	–	–	–	–
BELGAUM (Average strength, 1,307. Daily sick, 45·5.)	Admissions	1,298	–	673	37	41	3	3	4	–	37
	Deaths	7	–	2	–	–	1	–	–	–	–
	Ratio per mille.										
	Admissions	993·1	–	514·9	28·3	31·4	2·3	2·3	3·8	–	28·3
	Deaths	5·4	–	1·5	–	–	0·8	–	–	–	–
DHARWAR (Average strength, 666. Daily sick, 13·7.)	Admissions	393	1	42	–	1	9	–	1	–	13
	Deaths	5	1	1	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	590·1	1·5	63·1	–	1·5	13·5	–	1·5	–	19·5
	Deaths	7·5	1·5	1·5	–	–	–	–	–	–	–

XXIX.—Aden Brigade.

BRIGADE (Average strength, 1,037. Daily sick, 47·3.)	Admissions	968	–	267	28	37	50	3	12	3	28
	Deaths	12	–	2	–	–	1	1	2	–	–
	Ratio per mille.										
	Admissions	933·5	–	257·5	27·0	35·7	48·2	2·9	11·5	2·9	27·0
	Deaths	11·5	–	1·9	–	–	1·	1·	1·9	–	–
ADEN (Average strength, 971. Daily sick, 44·1.)	Admissions	862	–	251	13	33	24	3	12	3	28
	Deaths	11	–	2	–	–	1	1	2	–	–
	Ratio per mille.										
	Admissions	887·7	–	258·5	13·4	33·9	24·7	3·1	12·4	3·1	28·8
	Deaths	11·3	–	2·1	–	–	1·0	1·0	2·1	–	–

XXIX.—Aden Brigade—*continued.*

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
PERIM (Average strength, 66. Daily sick, 3·2.)	Admissions	106	–	16	15	4	26	–	–	–	–
	Deaths	1	–	–	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,606·1	–	242·4	227·3	60·6	393·9	–	–	–	·1
	Deaths	15·1	–	–	–	–	–	–	–	–	–

XXX.—Troops Marching.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
(Average strength, 269. Daily sick, 11·8)	Admissions	397	–	188	4	20	3	–	1	–	10
	Deaths	2	–	1	–	–	–	–	–	–	–
	Ratio per mille.										
	Admissions	1,475·8	–	698·9	14·9	74·3	11·1	–	3·7	–	37·2
	Deaths	7·4	–	3·7	–	–	–	–	–	–	–

XXXI.—Stations, arranged in order of the Highest Ratios of Sickness and Mortality among the Troops during the Year 1866.

Average Strength.	Sickness. Names.	Per Mille.	Average Strength.	Mortality. Names.	Per Mille.
216	Burda Chowkee	5,666·7	216	Burda Chowkee	32·4
54	Porebunder	4,407·4	66	Perim	15·1
629	Surat	2,225·7	1,763	Bombay	13·1
2,204	Jacobabad	2,055·8	971	Aden	11·3
49	Broach	1,816·6	717	Rajkote	11·2
93	Maunderdeo	1,720·4	722	Sholapoor	11·1
66	Perim	1,606·1	510	Dwarka	9·8
717	Rajkote	1,447·7	1,228	Ahmedabad	9·0
2,693	Poona	1,385·1	577	Bhooj	8·7
577	Bhooj	1,235·7	2,204	Jacobabad	8·6
510	Dwarka	1,221·6	126	Kirkee	7·9
1,047	Mhow	1,208·2	1,047	Mhow	7·6
126	Kirkee	1,206·3	666	Dharwar	7·5
1,763	Bombay	1,127·6	622	Hydrabad	6·4
873	Nuseerabad	1,029·8	629	Surat	6·3
854	Neemuch	1,014·0	336	Kolhapoor	6·0
1,307	Belgaum	993·1	1,307	Belgaum	5·3
248	Augur	931·4	577	Baroda	5·2
720	Ahmednugur	922·2	873	Nuseerabad	4·6
380	Mehidpoor	907·9	661	Kurachee	4·5
221	Indore	900·5	248	Augur	4·0
920	Deesa	898·9	570	Maligaum	3·5
971	Aden	887·7	2,693	Poona	3·3
172	Aseerghur	877·9	307	Tanna	3·3
671	Dhoolia	861·4	720	Ahmednugur	2·8
577	Baroda	856·2	854	Neemuch	2·3
1,228	Ahmedabad	846·9	920	Deesa	2·2
307	Tanna	758·9	671	Dhoolia	1·5
81	Sudra	753·1			
661	Kurachee	739·5			
570	Maligaum	719·3			
722	Sholapoor	637·1			
666	Dharwar	590·1			
336	Kolhapoor	565·5			
137	Kulladghee	554·7			
622	Hyderabad	440·5			
194	Seroor	386·6			

CANTONMENTS.

THE general population of cantonments is not accurately known, and the returns of death rendered can only be viewed as approximately correct—as reported.

In Poona cantonment the death-rate was 14 per thousand.

„ Mhow	„	„	14	„
„ Neemuch	„	„	24	„
„ Surat	„	„	41	„
„ Deesa	„	„	16	„
„ Jacobabad	„	„	25	„
„ Bombay	„	„	31	„
„ Belgaum	„	„	15	„
„ Aden	„	„	20	„

Fever is reported to have been by far the most prevalent and most fatal disease. There was a remarkable immunity from small-pox and cholera. A few isolated cases of cholera occurred. In Sholapoor cantonment only, where there were 42 deaths from it, did the disease assume an epidemic form.

DEATHS Reported at the CANTONMENT of *Poona* during the Year 1866.

Reported Population: Male - - 17,136. Female - 14,850.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	–	–	–	–	14	5	1	1	–	–	–	2	15	8
February - - - -	–	–	–	1	7	5	–	–	2	–	4	4	13	10
March - - - -	–	–	–	–	17	10	2	–	–	–	3	7	22	17
April - - - -	–	–	–	–	10	7	–	–	–	–	3	6	13	13
May - - - -	–	–	–	–	5	5	3	2	–	–	5	9	13	16
June - - - -	–	–	–	–	21	15	1	1	1	1	2	3	25	20
July - - - -	–	–	–	–	10	22	–	1	1	–	9	9	20	32
August - - - -	–	–	–	–	14	19	7	2	–	–	8	12	29	33
September - - -	–	–	–	–	10	15	1	3	1	–	4	6	16	24
October - - - -	–	–	–	–	9	10	3	4	–	2	5	3	17	19
November - - -	–	–	–	–	8	10	–	–	–	–	5	10	13	20
December - - -	–	–	–	–	19	11	1	–	–	–	5	3	25	14
YEAR - - -	–	–	–	1	144	134	19	14	5	3	53	74	221	226

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	11,037	9,500	–	–	–	1	87	84	6	4	2	2	13	19	108	110
Jains - - - -	124	53	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans - - -	3,199	2,762	–	–	–	–	21	21	3	3	2	1	3	4	29	29
Parsees - - - -	413	358	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews - - - -	93	62	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians - -	1,898	1,101	–	–	–	–	27	23	–	–	–	–	8	14	35	37
Indo-Europeans - -	235	257	–	–	–	–	3	1	2	1	–	–	8	13	13	15
Europeans - - -	637	757	–	–	–	–	6	5	8	6	1	–	21	24	36	35
Unknown Race - - -	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes - -	17,136	14,850	–	–	–	1	144	134	19	14	5	3	53	74	221	226

DEATHS Reported at the CANTONMENT of *Poorundhur* during the Year 1866.

Reported Population: Male - - 185. Female - - 144.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	–	–	–	–	–	–	1	1	1	1
May	–	–	–	–	–	–	–	–	–	–	–	1	–	1
June	–	–	–	–	–	–	–	–	–	–	–	–	–	–
July	–	–	–	–	–	–	–	–	–	–	–	–	–	–
August	–	–	–	–	–	–	–	–	–	–	–	1	–	1
September	–	–	–	–	–	–	–	–	–	–	–	–	–	–
October	–	–	–	–	–	–	–	–	–	–	–	–	–	–
November	–	–	–	–	–	–	–	–	–	–	–	–	–	–
December	–	–	–	–	–	–	–	–	–	–	–	–	–	–
YEAR	–	–	–	–	–	–	–	–	–	–	1	3	1	3

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	90	62	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	41	34	–	–	–	–	–	–	–	–	–	–	1	1	1	1
Parsees	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	31	9	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Indo-Europeans	1	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	20	36	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	185	144	–	–	–	–	–	–	–	–	–	–	1	3	1	3

DEATHS Reported at the CANTONMENT of *Satara* during the Year 1866.

Reported Population: Male - - 762. Female - - 862.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	2	–	–	–	–	–	–	–	2
February	–	–	–	–	–	2	1	–	–	–	–	–	1	2
March	–	–	–	–	1	–	–	–	–	–	1	–	2	–
April	–	–	–	–	1	2	1	–	–	–	–	–	2	2
May	–	–	–	–	–	2	–	–	–	–	–	–	–	2
June	–	–	–	–	–	–	–	–	–	–	2	–	2	–
July	–	–	–	–	–	–	–	–	–	–	–	–	–	–
August	–	–	–	–	1	–	1	1	–	–	1	–	3	1
September	–	–	–	–	–	–	–	3	–	–	–	–	–	3
October	–	–	–	–	1	3	–	–	–	–	–	–	1	3
November	–	–	–	–	2	–	–	–	–	–	–	–	2	–
December	–	–	–	–	2	1	–	–	–	–	–	2	2	3
YEAR	–	–	–	–	8	12	3	4	–	–	4	2	15	18

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	497	595	–	–	–	–	4	6	1	3	–	–	1	2	6	11
Jains	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	199	218	–	–	–	–	3	5	2	1	–	–	2	–	7	6
Parsees	22	16	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Jews	4	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	37	30	–	–	–	–	1	–	–	–	–	–	1	–	2	–
Indo-Europeans	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	762	862	–	–	–	–	8	12	3	4	–	–	4	2	15	18

DEATHS Reported at the CANTONMENT of *Sholapoor* during the Year 1866.

Reported Population: Male - - 3,177. Female - - 2,939.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	6	3	–	–	–	–	–	–	6	3
February	–	–	–	–	2	6	–	–	–	–	–	–	2	6
March	–	–	–	–	6	5	–	–	–	–	–	–	6	5
April	–	–	–	–	11	4	–	–	–	–	–	–	11	4
May	–	–	–	–	12	13	1	–	–	–	–	–	13	13
June	4	3	–	–	8	5	–	–	–	–	–	–	12	8
July	18	17	–	–	18	15	–	–	–	–	–	–	36	32
August	–	–	–	–	8	10	–	–	–	–	–	–	8	10
September	–	–	–	–	10	4	–	–	–	–	–	–	10	4
October	–	–	–	–	8	6	–	–	–	–	–	–	8	6
November	–	–	–	–	7	4	–	–	–	–	–	–	7	4
December	–	–	–	–	2	4	–	–	–	–	–	–	2	4
YEAR	22	20	–	–	98	79	1	–	–	–	–	–	121	99

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	2,169	2,021	16	17	–	–	75	61	1	–	–	–	–	–	92	78
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	847	807	6	3	–	–	21	17	–	–	–	–	–	–	27	20
Parsees	32	32	–	–	–	–	1	1	–	–	–	–	–	–	1	1
Jews	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	78	50	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Indo-Europeans	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	51	29	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	3,177	2,939	22	20	–	–	98	79	1	–	–	–	–	–	121	99

DEATHS Reported at the CANTONMENT of *Seroor* during the Year 1866.

Reported Population: Male - - 603. Female - - 471.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	–	–	1	–	–	–	–	–	
February	–	–	–	–	–	–	–	–	–	–	–	1	–	1
March	–	–	–	–	–	1	–	–	–	–	1	–	1	1
April	–	–	–	–	–	–	–	1	–	–	–	–	–	1
May	–	–	–	–	–	–	–	–	–	–	–	–	–	1
June	–	–	–	–	–	–	–	–	–	–	–	–	–	–
July	–	–	–	–	–	–	–	–	–	–	–	–	–	–
August	–	–	–	–	–	–	–	–	–	–	–	–	–	–
September	–	–	–	–	–	–	–	–	–	–	1	–	1	–
October	–	–	–	–	–	–	–	–	–	–	–	–	–	–
November	–	–	–	–	–	–	–	–	–	–	1	–	1	–
December	–	–	–	–	–	–	–	–	–	–	–	–	–	–
YEAR	–	–	–	–	–	1	–	2	–	–	3	1	3	4

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	246	166	–	–	–	–	–	–	–	1	–	–	2	1	2	2
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	347	302	–	–	–	–	–	1	–	1	–	–	1	–	1	2
Parsees	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo-Europeans	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	5	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	603	471	–	–	–	–	–	1	–	2	–	–	3	1	3	4

DEATHS Reported at the CANTONMENT of *Ahmednugur* during the Year 1866.

Reported Population: Male - - 3,515. Female - 3,465.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	5	7	2	–	1	–	7	4	15	11
February	–	–	–	–	3	3	2	–	2	1	–	7	7	11
March	1	–	–	–	4	4	–	1	–	–	–	3	5	8
April	–	–	–	–	2	7	1	–	1	–	–	1	4	8
May	–	–	–	–	3	4	1	–	–	–	1	1	5	5
June	–	–	–	–	–	1	3	–	–	–	3	4	6	5
July	–	–	–	–	–	1	1	1	–	–	7	1	8	3
August	–	–	–	–	1	–	1	1	–	–	5	5	7	6
September	–	–	–	–	4	2	–	2	–	–	8	2	12	6
October	–	–	–	–	2	3	1	1	–	–	6	2	9	6
November	–	–	–	–	3	2	1	–	–	–	2	2	6	4
December	–	–	–	–	1	–	1	–	–	–	9	2	11	2
YEAR	1	–	–	–	28	34	14	6	4	1	48	34	95	75

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	2,695	2,579	1	–	–	–	16	21	10	6	4	1	34	26	65	54
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	595	601	–	–	–	–	7	12	2	–	–	–	11	7	20	19
Parsees	29	26	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Jews	19	25	–	–	–	–	2	1	–	–	–	–	–	–	2	1
Native Christians	93	70	–	–	–	–	1	–	1	–	–	–	2	–	4	–
Indo-Europeans	30	43	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	54	121	–	–	–	–	2	–	1	–	–	–	1	–	4	–
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	3,515	3,465	1	–	–	–	28	34	14	6	4	1	48	34	95	75

DEATHS Reported at the CANTONMENT of *Malligaum* during the Year 1866.

Reported Population: Male - - 3,134. Female - 3,104.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	4	1	1	1	–	1	7	5	12	8
February	–	–	–	–	2	3	–	–	–	–	6	5	8	8
March	–	–	–	–	2	1	2	–	–	1	2	3	6	5
April	–	–	–	–	2	3	–	–	–	1	3	4	5	8
May	–	–	–	–	1	5	1	–	–	–	–	3	2	8
June	–	–	–	–	1	–	2	1	–	–	6	1	9	2
July	–	–	–	–	1	–	1	–	–	–	4	1	6	1
August	–	–	–	–	–	–	–	–	–	–	2	2	2	2
September	–	–	–	–	1	1	1	1	1	–	6	–	9	2
October	–	–	–	–	4	3	1	–	–	–	–	–	5	3
November	–	–	–	–	2	3	1	–	–	–	5	2	8	5
December	–	–	–	–	–	–	1	2	–	–	4	2	5	4
YEAR	–	–	–	–	20	20	11	5	1	3	45	28	77	56

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	2,381	2,381	–	–	–	–	12	16	10	4	1	3	37	20	60	43
Jains	141	57	–	–	–	–	4	–	–	–	–	–	1	–	5	–
Moosulmans	490	535	–	–	–	–	3	3	1	1	–	–	6	8	10	12
Parsees	7	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	36	57	–	–	–	–	1	1	–	–	–	–	1	–	2	1
Native Christians	62	89	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo-Europeans	8	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	9	26	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	3,134	3,104	–	–	–	–	20	20	11	5	1	3	45	28	77	56

DEATHS Reported at the CANTONMENT of *Aseerghur* during the Year 1866.

Reported Population: Male - - 1,255. Female - - 1,370.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	–	–	–	–	–	8	5	8	5
February	–	–	–	–	–	1	–	–	–	–	1	2	1	3
March	–	–	–	–	–	1	–	–	–	–	3	1	3	2
April	–	–	–	–	–	–	–	–	–	–	–	3	–	3
May	–	–	–	–	3	–	–	–	1	–	4	1	8	1
June	–	–	–	–	–	1	–	–	–	–	–	2	–	3
July	–	–	–	–	–	1	–	–	–	–	2	–	2	1
August	–	–	–	–	–	1	–	–	1	–	3	1	4	2
September	–	–	–	–	–	–	–	–	–	–	1	2	1	2
October	–	–	–	–	–	1	–	–	–	–	1	3	1	4
November	–	–	–	–	–	1	–	–	–	–	2	2	2	3
December	–	–	–	–	1	1	–	–	–	–	2	–	3	1
YEAR	–	–	–	–	4	8	–	–	2	–	27	22	33	30

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	850	958	–	–	–	–	2	6	–	–	1	–	18	15	21	21
Jains	90	77	–	–	–	–	–	1	–	–	–	–	4	2	4	3
Moosulmans	290	313	–	–	–	–	2	1	–	–	1	–	5	5	8	6
Parsees	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	20	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo-Europeans	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	3	16	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	1,255	1,370	–	–	–	–	4	8	–	–	2	–	27	22	33	30

DEATHS Reported at the CANTONMENT of *Dhoolia* during the Year 1866.

Reported Population: Male - - 646. Female - - 413.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	1	–	–	–	1	–	–	–	2
February	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	–	–	–	–	–	3	–	–	–	–	–	–	–	3
April	–	–	–	–	–	2	–	–	–	–	–	–	–	2
May	–	–	–	–	–	1	–	–	–	–	–	–	–	1
June	–	–	–	–	–	–	–	–	–	–	1	–	1	–
July	–	–	–	–	–	–	–	–	–	–	–	–	–	–
August	–	–	–	–	–	–	–	–	–	–	–	–	–	–
September	–	–	–	–	–	–	–	–	–	–	–	1	–	1
October	–	–	–	–	2	1	1	–	–	–	–	–	3	1
November	–	–	–	–	1	–	–	–	–	–	–	1	1	1
December	–	–	–	–	–	–	–	–	–	–	–	1	–	1
YEAR	–	–	–	–	3	8	1	–	–	1	1	3	5	12

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	532	321	–	–	–	–	3	5	1	–	–	1	–	2	4	8
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	87	70	–	–	–	–	–	3	–	–	–	–	1	–	1	3
Parsees	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	18	14	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Indo-Europeans	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	7	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	646	413	–	–	–	–	3	8	1	–	–	1	1	3	5	12

DEATHS Reported at the CANTONMENT of *Mhow* during the Year 1866.

Reported Population: Male - - 11,477. Female - 9,603.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	9	6	–	–	–	–	5	2	14	8
February	–	–	–	–	9	8	–	3	–	–	4	2	13	13
March	–	–	–	–	2	3	–	–	–	–	2	–	4	3
April	–	–	–	–	13	7	3	2	1	–	5	2	22	11
May	–	–	1	–	5	5	1	–	1	–	4	1	12	6
June	–	–	–	–	4	3	–	–	–	–	–	4	4	7
July	–	–	–	–	3	2	5	2	–	–	3	5	11	9
August	–	–	–	–	1	2	4	1	–	1	3	1	8	5
September	–	–	–	–	2	3	1	1	–	–	3	7	6	11
October	–	–	–	–	17	15	–	1	1	–	5	7	23	23
November	–	–	–	–	15	12	–	2	1	–	5	4	21	18
December	–	–	–	–	23	5	3	2	4	–	8	4	38	11
YEAR	–	–	1	–	103	71	17	14	8	1	47	39	176	125

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	7,858	6,099	–	–	1	–	61	34	13	7	5	–	33	24	113	65
Jains	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	3,010	2,939	–	–	–	–	40	34	–	3	2	1	6	7	48	45
Parsees	127	103	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	24	21	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	258	83	–	–	–	–	–	1	–	–	–	–	1	3	1	4
Indo-Europeans	25	38	–	–	–	–	–	–	–	–	–	–	–	2	–	2
Europeans	173	318	–	–	–	–	2	2	4	4	1	–	7	3	14	9
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	11,477	9,603	–	–	1	–	103	71	17	14	8	1	47	39	176	125

DEATHS Reported at the CANTONMENT of *Mehidpoor* during the Year 1866.

Reported Population: Male - - 332. Female - - 445.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	1	–	–	–	–	–	1	–	2
February	–	–	–	–	2	–	–	1	–	–	–	–	2	1
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	–	–	–	–	–	–	–	–	–	–
May	–	–	–	–	–	–	–	–	–	–	–	–	–	–
June	–	–	–	–	–	–	–	–	–	–	–	–	–	–
July	–	–	–	–	1	–	–	1	–	–	–	–	1	1
August	–	–	–	–	1	–	–	1	–	–	–	–	1	1
September	–	–	–	–	–	2	–	–	–	–	–	–	–	2
October	–	–	–	–	–	–	–	–	–	–	–	–	–	–
November	–	–	–	–	1	–	–	–	–	–	–	–	1	–
December	–	–	–	–	–	–	1	–	–	–	1	2	2	2
YEAR	–	–	–	–	5	3	1	3	–	–	1	3	7	9

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	262	356	–	–	–	–	3	3	1	3	–	–	–	3	4	9
Jains	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	54	65	–	–	–	–	2	–	–	–	–	–	1	–	3	–
Parsees	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	7	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo-Europeans	5	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	2	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	332	445	–	–	–	–	5	3	1	3	–	–	1	3	7	9

DEATHS Reported at the CANTONMENT of *Neemuch* during the Year 1866.

Reported Population: Male - 4,771 Female - 3,706	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	15	3	–	–	–	–	8	4	23	7
February	–	–	–	–	12	6	–	–	–	–	–	–	12	6
March	–	–	–	–	3	2	–	–	–	–	1	–	4	2
April	–	–	–	–	6	11	1	–	–	–	–	–	7	11
May	–	–	–	–	2	2	–	–	1	–	–	–	3	2
June	–	–	–	–	2	2	–	–	–	–	–	1	2	3
July	–	–	–	–	5	–	–	–	–	–	2	–	7	–
August	–	–	–	–	4	14	–	–	–	–	–	1	4	15
September	–	–	–	–	7	4	1	–	–	–	2	–	10	4
October	–	–	–	–	17	8	–	–	–	–	1	–	18	8
November	–	–	–	–	12	9	–	–	–	–	3	–	15	9
December	–	–	–	–	10	10	1	–	–	–	7	3	18	13
YEAR	–	–	–	–	95	71	3	–	1	–	24	9	123	80

RACES.	Population,		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	3,195	2,376	–	–	–	–	75	60	3	–	1	–	18	9	97	69
Jains	304	237	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	1,157	1,038	–	–	–	–	19	11	–	–	–	–	3	–	22	11
Parsees	41	29	–	–	–	–	–	–	–	–	–	–	3	–	3	–
Jews	3	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	55	15	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Indo-Europeans	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race	10	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	4,771	3,706	–	–	–	–	95	71	3	–	1	–	24	9	123	80

DEATHS Reported at the CANTONMENT of *Nuseerabad* during the Year 1866.

Reported Population: Male - 9,396 Female - 7,928	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	2	4	2	–	–	1	1	2	5	7
February	–	–	–	–	7	4	2	1	–	–	9	6	18	11
March	–	–	–	–	4	6	5	1	1	–	10	8	20	15
April	–	–	–	–	15	1	1	–	1	–	10	4	27	5
May	–	–	–	–	14	7	1	–	1	1	7	4	23	12
June	–	–	–	–	7	1	1	1	–	–	5	4	13	6
July	–	–	–	–	5	3	2	–	1	2	6	3	14	8
August	–	–	–	–	4	5	1	–	–	–	8	3	13	8
September	–	–	–	–	7	5	–	4	–	–	4	8	11	17
October	–	–	–	–	5	3	1	3	–	–	2	4	8	10
November	–	–	–	–	7	2	–	–	–	–	2	4	9	6
December	–	–	–	–	3	3	–	1	–	–	4	3	7	7
YEAR	–	–	–	–	80	44	16	11	4	4	68	53	168	112

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	6,951	5,768	–	–	–	–	61	36	13	8	3	4	45	40	122	88
Jains	98	83	–	–	–	–	1	–	–	–	–	–	1	–	2	–
Moosulmans	2,173	1,870	–	–	–	–	15	8	2	–	1	–	18	10	36	18
Parsees	23	16	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Jews	1	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	62	20	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Indo-Europeans	3	1	–	–	–	–	–	–	–	–	–	–	1	–	1	–
Europeans	70	160	–	–	–	–	1	–	1	3	–	–	3	3	5	6
Unknown Race	15	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	9,396	7,928	–	–	–	–	80	44	16	11	4	4	68	53	168	12

DEATHS Reported at the CANTONMENT of *Surat* during the Year 1866.

Reported Population: Male - - 334 Female - 183	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	1	1	–	–	–	–	–	–	1	1
February	–	–	–	–	–	2	–	–	–	–	–	–	–	2
March	–	–	–	–	1	–	–	1	–	–	1	–	2	1
April	–	–	–	–	1	2	–	–	–	–	–	1	1	3
May	–	–	–	–	1	–	1	–	–	–	1	–	3	–
June	–	–	–	–	–	2	–	1	–	–	1	–	1	3
July	–	–	–	–	1	–	–	–	–	–	–	1	1	1
August	–	–	–	–	1	–	–	1	–	–	–	–	1	1
September	–	–	–	–	–	1	–	–	–	–	2	1	2	2
October	–	–	–	–	–	3	–	–	–	–	–	–	–	3
November	–	–	–	–	–	–	–	1	–	–	–	1	–	2
December	–	–	–	–	2	1	–	–	–	–	–	–	2	1
YEAR	–	–	–	–	8	12	1	4	–	–	5	4	14	20

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	254	404	–	–	–	–	7	8	1	3	–	–	3	3	11	14
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	37	43	–	–	–	–	–	4	–	–	–	–	–	1	–	5
Parsees	6	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	20	20	–	–	–	–	–	–	–	–	–	–	2	–	2	–
Native Christians	13	3	–	–	–	–	1	–	–	1	–	–	–	–	1	1
Indo-Europeans	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	4	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	334	483	–	–	–	–	8	12	1	4	–	–	5	4	14	20

DEATHS Reported at the CANTONMENT of *Baroda* during the Year 1866.

Reported Population: Male - - 1,913 Female - 1,502	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	–	–	1	–	–	–	–	–	1
February	–	–	–	–	1	–	–	–	–	–	2	1	3	1
March	–	–	–	–	1	–	–	–	–	–	–	–	1	–
April	–	–	–	–	–	–	–	–	–	1	–	–	–	1
May	1	–	–	–	–	–	–	–	–	–	–	–	1	–
June	–	–	–	–	–	–	–	–	–	–	–	–	–	–
July	–	–	–	–	1	–	–	–	–	–	–	1	1	1
August	–	–	–	–	–	–	–	–	–	–	–	–	–	–
September	–	–	–	–	–	–	–	–	–	–	–	–	–	–
October	–	–	–	–	1	–	–	–	–	–	–	–	1	–
November	–	–	–	–	3	1	1	–	–	–	–	–	4	1
December	–	–	–	–	1	3	–	–	–	–	–	–	1	3
YEAR	1	–	–	–	8	4	1	1	–	1	2	2	12	8

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	1,544	1,206	–	–	–	–	6	4	1	1	–	1	1	2	8	8
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	213	163	1	–	–	–	2	–	–	–	–	–	–	–	3	–
Parsees	97	91	–	–	–	–	–	–	–	–	–	–	1	–	1	–
Jews	25	23	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	21	13	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo-Europeans	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	11	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown Race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	1,913	1,502	1	–	–	–	8	4	1	1	–	1	2	2	12	8

DEATHS Reported at the CANTONMENT of *Ahmedabad* during the Year 1866.

Reported Population: Male - - 1,660 Female - 1,558	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	2	–	–	–	–	–	–	1	2	1
February	–	–	–	–	1	–	–	–	–	–	–	–	1	–
March	–	–	–	–	1	–	–	–	–	–	1	1	2	1
April	–	–	–	–	2	1	–	–	–	–	–	–	2	1
May	–	2	–	–	1	2	–	–	–	–	–	–	1	4
June	–	–	–	–	–	–	1	–	–	–	–	–	1	–
July	–	–	–	–	–	–	–	–	–	–	–	–	–	–
August	–	–	–	–	–	1	–	–	–	–	–	–	–	1
September	–	–	–	–	1	–	–	–	–	–	1	–	2	–
October	–	–	–	–	1	–	–	–	–	–	–	–	1	–
November	–	–	–	–	2	–	–	–	–	–	1	–	3	–
December	–	–	–	–	3	2	–	–	–	–	–	–	3	2
YEAR	–	2	–	–	14	6	1	–	–	–	3	2	18	10

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	1,150	1,161	–	2	–	–	6	4	1	–	–	–	3	1	10	7
Jains	6	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	316	290	–	–	–	–	5	2	–	–	–	–	–	1	5	3
Parsees	7	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	6	16	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	40	25	–	–	–	–	2	–	–	–	–	–	–	–	2	–
Indo-Europeans	1	16	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	134	41	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Unknown race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	1,660	1,558	–	2	–	–	14	6	1	–	–	–	3	2	18	10

DEATHS Reported at the CANTONMENT of *Deesa* during the Year 1866.

Reported Population: Male - - 5,782 Female - 4,668	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	8	2	–	–	–	–	5	5	13	7
February	–	–	–	–	3	1	–	–	–	–	9	3	12	4
March	–	–	–	–	6	5	–	–	–	–	2	5	8	10
April	–	–	–	–	5	3	1	–	–	–	2	1	8	4
May	–	–	–	–	8	1	–	–	1	–	3	3	12	4
June	–	–	–	–	4	2	–	1	1	–	4	1	9	4
July	–	–	–	–	6	4	–	–	–	–	6	1	12	5
August	–	–	–	–	5	4	–	–	2	–	3	3	10	7
September	–	–	–	–	2	4	–	–	–	–	–	–	2	4
October	–	–	–	–	1	1	–	–	–	–	5	4	6	5
November	–	–	–	–	5	3	–	–	–	–	5	6	10	9
December	–	–	–	–	3	1	1	–	–	–	3	–	7	1
YEAR	–	–	–	–	56	31	2	1	4	–	47	32	109	64

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	4,344	3,701	–	–	–	–	35	17	1	–	2	–	27	27	65	44
Jains	1	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–
Moosulmans	1,260	894	–	–	–	–	18	14	1	–	1	–	18	5	38	19
Parsees	62	34	–	–	–	–	2	–	–	–	–	–	–	–	2	–
Jews	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	112	38	–	–	–	–	1	–	–	1	–	–	–	–	1	1
Indo-Europeans	3	1	–	–	–	–	–	–	–	–	–	–	2	–	2	–
Europeans	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	5,782	4,668	–	–	–	–	56	31	2	1	4	–	47	32	109	64

DEATHS Reported at the CANTONMENT of *Rajkote* during the Year 1866.

Reported Population: Male - - 329 Female - 381	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident or Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	1	–	–	–	–	–	–	–	1
March	–	–	–	–	1	–	–	–	–	–	–	–	1	–
April	–	1	–	–	3	1	–	–	–	–	1	1	4	3
May	–	–	–	–	–	–	–	–	–	–	–	–	–	–
June	1	–	–	–	1	–	–	–	–	–	1	–	3	–
July	–	–	–	–	1	–	–	–	–	–	1	–	2	–
August	–	–	–	–	–	–	–	–	–	–	–	1	–	1
September	–	–	–	–	–	–	–	–	–	–	2	1	2	1
October	–	–	–	–	–	–	–	–	–	–	–	–	–	–
November	–	–	–	–	–	–	–	–	–	–	–	–	–	–
December	–	–	–	–	–	1	–	–	–	–	–	–	–	1
YEAR	1	1	–	–	6	3	–	–	–	–	5	3	12	7

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	235	287	1	–	–	–	6	2	–	–	–	–	2	1	9	3
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	70	67	–	1	–	–	–	1	–	–	–	–	–	2	–	4
Parsees	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	4	13	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	14	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo Europeans	2	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	4	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race	–	–	–	–	–	–	–	–	–	–	–	–	3	–	3	–
All Races and Castes	329	381	1	1	–	–	6	3	–	–	–	–	5	3	12	7

DEATHS Reported at the CANTONMENT of *Bhooj* during the Year 1866.

Reported Population: Male - - 365 Female - 485	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	1	–	1	–
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	1	1	–	–	–	–	1	–	2	1
May	–	–	–	–	–	–	–	–	–	–	–	–	–	–
June	–	–	–	–	–	–	–	–	–	–	1	–	1	–
July	–	–	–	–	–	–	–	–	–	–	1	–	1	–
August	–	–	–	–	–	–	1	1	–	–	–	–	1	1
September	–	–	–	–	1	1	–	–	–	–	–	–	1	1
October	–	–	–	–	–	1	–	–	–	–	–	–	–	1
November	–	–	–	–	1	1	–	–	–	–	–	–	1	1
December	–	–	–	–	1	1	–	–	–	–	–	–	1	1
YEAR	–	–	–	–	4	5	1	1	–	–	4	–	9	6

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	233	341	–	–	–	–	4	4	–	1	–	–	2	–	6	5
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	101	110	–	–	–	–	–	1	1	–	–	–	2	–	3	1
Parsees	16	16	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	11	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo-Europeans	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	3	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	365	485	–	–	–	–	4	5	1	1	–	–	4	–	9	6

DEATHS Reported at the CANTONMENT of *Kurachee* during the Year 1866.

Reported Population: Male - 1,391 Female - 890	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	1	–	–	–	–	–	–	2	1	2
February	–	–	–	–	1	–	–	–	–	–	1	1	2	1
March	–	–	–	–	–	–	–	–	–	–	1	1	1	1
April	–	–	–	1	–	–	–	–	–	–	–	–	–	1
May	–	–	–	–	–	1	–	–	1	–	4	1	5	2
June	–	–	–	–	–	1	–	–	–	–	–	–	–	1
July	–	–	–	–	–	–	–	–	–	–	2	–	2	–
August	–	–	–	–	–	1	–	–	–	–	2	–	2	1
September	–	–	–	–	–	1	–	–	–	–	–	–	–	1
October	–	–	–	–	–	–	–	–	–	–	–	–	–	–
November	–	–	–	–	1	–	–	–	–	–	1	1	2	1
December	–	–	–	–	1	1	–	–	–	1	–	–	1	2
YEAR	–	–	–	1	4	5	–	–	1	1	11	6	16	13

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female
Hindoos	784	386	–	–	–	1	1	3	–	–	–	–	2	1	3	5
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	209	302	–	–	–	–	1	2	–	–	1	–	2	1	4	3
Parsees	11	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	6	6	–	–	–	–	–	–	–	–	–	1	–	–	–	1
Native Christians	119	20	–	–	–	–	–	–	–	–	–	–	2	–	2	–
Indo-Europeans	12	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	250	157	–	–	–	–	2	–	–	–	–	–	5	4	7	4
Unknown race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	1,391	890	–	–	–	1	4	5	–	–	1	1	11	6	16	13

DEATHS Reported at the CANTONMENT of *Hydrabad* during the Year 1866.

Reported Population: Male - 1,484 Female - 1,194	Cholera.		Small-Pox.		Fever.		Dysentry and Diarrhœa.		Accident and Violenc e.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	1	2	–	–	–	–	2	–	3	2
February	–	–	–	–	1	–	–	–	–	–	–	–	1	–
March	–	–	–	–	1	–	–	–	–	–	1	3	2	3
April	–	–	–	–	1	–	–	–	–	–	1	2	2	2
May	–	–	–	–	2	–	–	–	–	–	1	2	3	2
June	–	–	–	–	–	1	–	–	–	–	–	–	–	1
July	–	–	–	–	1	3	–	1	–	–	–	–	1	4
August	–	–	–	–	2	3	–	1	–	–	–	–	2	4
September	–	–	–	–	2	1	–	–	–	–	–	–	2	1
October	–	–	–	–	2	–	2	–	–	–	–	–	4	–
November	–	–	–	–	1	–	–	–	–	–	–	1	1	1
December	–	–	–	–	–	–	–	–	–	–	–	–	–	–
YEAR	–	–	–	–	14	10	2	2	–	–	5	8	21	20

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentry and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	541	294	–	–	–	–	4	4	1	–	–	–	3	4	8	8
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	761	741	–	–	–	–	9	6	–	1	–	–	1	2	10	9
Parsees	35	28	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	6	9	–	–	–	–	–	–	–	–	–	–	1	–	1	–
Native Christians	67	18	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo-Europeans	12	14	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Europeans	53	83	–	–	–	–	–	–	1	1	–	–	–	2	1	3
Unknown race	9	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	1,484	1,194	–	–	–	–	14	10	2	2	–	–	5	8	21	20

DEATHS Reported at the CANTONMENT of *Jacobabad* during the year 1866.

Reported Population: Male - - 3,382 Female - 1,759	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	1	4	–	–	–	1	–	–	1	5
February	–	–	–	–	–	1	–	–	–	–	4	2	4	3
March	–	–	–	–	–	3	–	–	1	–	1	1	2	4
April	–	–	1	–	10	3	–	–	–	–	–	–	11	3
May	–	–	–	–	1	1	1	–	–	–	–	–	2	1
June	–	–	1	1	2	1	–	–	–	–	5	4	8	6
July	–	–	–	–	5	1	–	–	–	–	–	1	5	2
August	–	–	–	–	–	–	–	–	–	–	–	1	–	1
September	–	–	–	–	7	4	–	–	–	–	5	2	12	6
October	–	–	–	–	9	12	–	–	–	–	3	3	12	15
November	–	–	–	–	7	6	3	3	–	–	1	–	11	9
December	–	–	–	–	1	6	–	–	–	1	–	–	1	7
YEAR	–	–	2	1	43	42	4	3	1	2	19	14	69	62

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	1,079	424	–	–	1	1	17	15	1	–	1	1	4	5	24	22
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	2,248	1,296	–	–	1	–	25	27	3	3	–	1	15	9	44	40
Parsees	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	31	22	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Indo-Europeans	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	1	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race	23	14	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	3,382	1,759	–	–	2	1	43	42	4	3	1	2	19	14	69	62

DEATHS Reported at the CANTONMENT of *Bombay* during the year 1866.

Reported Population: Male - - 1,182 Female - 1,591	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	3	4	–	–	–	–	–	–	3	4
February	–	–	–	–	7	4	–	–	–	–	1	1	8	5
March	–	–	2	2	4	3	–	–	–	–	1	2	7	7
April	–	–	–	–	1	5	–	–	–	–	–	–	1	5
May	–	–	–	–	2	1	–	–	–	–	1	–	3	1
June	–	–	1	–	–	2	–	–	–	–	–	–	1	2
July	–	–	–	–	2	2	–	–	–	–	2	–	4	2
August	–	–	–	–	1	1	1	–	–	–	1	3	3	4
September	–	–	–	–	1	3	–	–	–	–	–	4	1	7
October	–	–	–	–	–	3	–	–	–	–	3	2	3	5
November	–	–	–	–	1	1	–	–	–	–	–	1	1	2
December	–	–	–	–	4	1	1	2	–	–	–	1	5	4
YEAR	–	–	3	2	26	30	2	2	–	–	9	14	40	48

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	880	1,232	–	–	2	2	22	22	1	1	–	–	9	13	34	38
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	182	214	–	–	–	–	4	7	1	–	–	–	–	–	5	7
Parsees	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	32	50	–	–	1	–	–	1	–	1	–	–	–	1	1	3
Native Christians	75	18	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo-Europeans	1	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	9	72	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	1,182	1,591	–	–	3	2	26	30	2	2	–	–		14	40	48

DEATHS Reported at the CANTONMENT of *Kolapoor* during the Year 1866.

Reported Population: Male - - 408 Female - 513	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	–	1	–	1
March	–	–	–	–	–	–	–	–	–	–	–	1	–	1
April	–	–	–	–	–	–	–	–	–	–	–	–	–	–
May	–	–	–	–	–	–	–	–	–	–	–	1	–	1
June	–	–	–	–	–	1	–	–	–	–	–	–	–	1
July	1	–	–	–	–	–	–	–	–	–	–	1	1	1
August	–	–	–	–	1	–	–	–	–	–	1	2	2	2
September	–	–	–	–	–	1	–	–	–	–	1	3	1	4
October	–	–	–	–	–	–	–	–	–	–	–	1	–	1
November	–	–	–	–	–	–	–	–	–	–	–	–	–	–
December	–	–	–	–	–	–	–	–	–	–	–	–	–	–
YEAR	1	–	–	–	1	2	–	–	–	–	2	10	4	12

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	244	316	1	–	–	–	–	1	–	–	–	–	2	7	3	8
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	134	155	–	–	–	–	1	1	–	–	–	–	–	3	1	4
Parsees	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	4	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	22	22	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo-Europeans	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	2	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	408	513	1	–	–	–	1	2	–	–	–	–	2	10	4	12

DEATHS Reported at the CANTONMENT of *Kuladghee* during the Year 1866.

Reported Population: Male - - 113 Female - 118	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	–	–	–	–	–	–	–	–	–	–
May	–	–	–	–	–	–	–	–	–	–	1	1	1	1
June	–	–	–	–	–	–	–	–	–	–	–	1	–	1
July	–	–	–	–	–	–	–	–	–	–	–	–	–	–
August	–	–	–	–	–	–	–	–	–	–	1	–	1	–
September	–	–	–	–	–	–	–	–	–	–	–	–	–	–
October	–	–	–	–	–	–	–	–	–	–	–	–	–	–
November	–	–	–	–	–	–	–	–	–	–	–	2	–	2
December	–	–	–	–	–	–	–	–	–	–	–	–	–	–
YEAR	–	–	–	–	–	–	–	–	–	–	2	4	2	4

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	59	59	–	–	–	–	–	–	–	–	–	–	1	3	1	3
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	46	55	–	–	–	–	–	–	–	–	–	–	1	1	1	1
Parsees	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Indo-Europeans	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	113	118	–	–	–	–	–	–	–	–	–	–	2	4	2	4

DEATHS Reported at the CANTONMENT of *Belgaum* during the Year 1866.

Reported Population: Male - - 4,300. Female - 4,941.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	3	1	–	–	–	–	2	3	5	4
February	–	–	–	–	1	1	–	–	–	–	2	6	3	7
March	–	–	–	–	2	1	–	–	–	–	2	3	4	4
April	–	–	–	–	3	5	2	–	–	–	6	5	11	10
May	–	–	1	–	1	5	–	1	–	–	3	5	5	11
June	1	2	–	–	3	2	4	6	–	–	1	3	9	13
July	–	–	–	–	2	2	–	–	1	–	4	4	7	6
August	–	–	–	–	2	6	–	–	–	–	6	1	8	9
September	–	–	–	–	2	2	–	–	–	–	4	3	6	3
October	–	–	–	–	1	2	–	–	–	–	1	3	2	5
November	–	–	–	–	1	2	–	–	–	–	1	1	2	3
December	–	–	–	–	3	–	–	1	–	–	3	1	6	2
YEAR	1	2	1	–	24	29	6	8	1	–	35	38	68	77

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	2,391	2,963	1	2	1	–	18	18	6	7	1	–	15	15	42	42
Jains	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	910	1,039	–	–	–	–	6	7	–	–	–	–	8	11	14	18
Parsees	22	11	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	26	31	–	–	–	–	–	–	–	–	–	–	–	2	–	2
Native Christians	765	638	–	–	–	–	–	2	–	–	–	–	4	4	4	6
Indo-Europeans	31	27	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	146	231	–	–	–	–	–	2	–	1	–	–	8	6	8	9
Unknown race	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	4,300	4,941	1	2	1	–	24	29	6	8	1	–	35	38	68	77

DEATHS Reported at the CANTONMENT of *Aden* during the Year 1866.

Reported Population: Male - - 1,639. Female - 1,035.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	1	–	1	1	–	–	1	–	3	1
February	–	–	–	–	–	–	–	–	–	–	2	2	2	2
March	–	–	–	–	–	1	–	–	–	–	–	–	–	1
April	–	–	–	–	1	–	1	–	–	–	–	1	2	1
May	–	–	–	–	–	1	–	2	–	–	2	1	2	4
June	–	–	–	–	–	1	4	–	–	–	1	–	5	1
July	–	–	–	–	–	2	1	1	–	–	–	–	1	3
August	–	–	–	–	1	1	–	–	–	–	–	–	1	1
September	–	1	–	1	1	1	–	–	–	–	–	3	1	6
October	–	–	–	–	–	–	1	1	–	–	2	1	3	2
November	–	–	–	–	–	1	–	–	–	–	2	2	2	3
December	–	–	–	–	–	1	2	–	–	–	3	1	5	2
YEAR	–	1	–	1	4	9	10	5	–	–	13	11	27	27

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	706	523	–	–	–	–	3	6	6	–	–	–	5	4	14	10
Jains	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulmans	620	316	–	1	–	1	–	2	–	–	–	–	4	4	4	8
Parsees	18	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jews	32	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Native Christians	125	38	–	–	–	–	1	–	–	1	–	–	1	1	2	2
Indo-Europeans	7	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Europeans	117	114	–	–	–	–	–	1	4	4	–	–	3	2	7	7
Unknown race	14	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	1,639	1,035	–	1	–	1	4	9	10	5	–	–	13	11	27	27

COLLECTORATES.

Sick travellers.

THE President was called on by Government to frame rules for the guidance of Village Patels, with regard to sick travellers (Appendix).

Pilgrimage tax.

Government sanctioned the levy of a tax from the Shrawak community at the Palitana Jutra, and a tax was exacted from pilgrims at Pundhurpoor, to provide for medical aid and sanitary measures.

Cholera.

On the receipt of information of the appearance of cholera in the Dharwar district, a recommendation was made to Government that the assemblage of pilgrims, which was about to occur at various places in the locality, should be prohibited, and Government issued directions to the magistrates to adopt all the steps, legally within their power, to prevent people resorting to the places named.

Water supply.

Means of filtration of tank water came under consideration, and a proposal on the subject was submitted to Government. It is not known that any practical results ensued.

Infant burial.

Government issued orders for the marking out of infant burial grounds, with a view to check domiciliary interments, and instructed magistrates to endeavour to prevent the practice.

Emigration.

The high rate of mortality among emigrants had attracted attention, and was attributed, in a report by the President, to a poor state of health on embarkation, owing to detention in Bombay, where fever is endemic, the food supplied to the emigrants insufficient, and their housing bad. A set of rules, revised by the President, was published by Government, with a view to securing the care and welfare of the emigrants.

Cholera.

The death returns from the various Collectorates show that cholera prevailed generally in a very small degree as compared with the preceding year; they at the same time afford proof that the disease is endemic throughout the Presidency, except it may be in Sind.

While in 1865 the Collectorates of Sholapoor, Kulladghee, Belgaum, Dharwar, and Canara were comparatively exempt from the epidemic, it seems that in 1866 in these Collectorates (notably in Dharwar) the disease was very prevalent, more so than in the preceding year.

Census.

In accordance with a system that obtains in the Madras Presidency, of taking a census of the population every five years, the population of North Canara was numbered in 1866; a large decrease (9 per cent.) on the census of five years preceding was exhibited. The decrease is said to be, without doubt, attributable to the fever which had been prevalent in the district.

Death rate.

It would be quite useless to attempt to draw any conclusions regarding the death rate throughout the Presidency, or in its respective districts, from the data at hand. There is reason to believe that the reported population is far from correct, and the returns of deaths are, in some instances, manifestly inaccurate. It may perhaps be legitimately inferred, by viewing the figures in total, that the general health throughout the Presidency was much better in 1866 than in the year preceding.

The unhealthiness of the Canara district led to a proposition that Europeans in the Public Works Department should be withdrawn from Canara, and natives only employed there. As regards Europeans, the statistical information available embraced so few numbers that the disturbing effects of abnormal casualties on the results deducible were likely to be great. It was ascertained that, out of 82 European residents, the average duration of service was one year and four months. Thirty-two had to leave Canara on account of sickness, of whom a number died after departure (but from the effects of its climate), to give a mortality of nearly seven per cent.; five died in the Collectorate. On a comparison it was found that the inland stations are very much more inimical to Europeans than to natives, but that at coast stations they suffer not very unequally. It was recommended that Europeans should not be employed in Canara for a prolonged period, away from the sea-coast, and that, as natives suffer much from malarious fever at inland stations, their term of duty in the interior should be limited to one year.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Tanna* during the Year 1866.

Reported Population, 900,000. Area—Square Miles, 5,400.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	6	4	–	–	387	328	13	3	6	5	56	39	468	379
February	–	1	–	1	336	219	17	5	19	9	50	49	422	284
March	–	1	3	5	215	133	6	11	18	12	66	28	308	190
April	12	3	5	6	144	101	13	10	12	7	53	22	239	149
May	1	–	14	11	187	117	16	7	23	3	49	39	290	177
June	1	–	6	1	105	65	13	2	15	5	30	33	170	106
July	1	2	–	–	93	54	13	12	7	7	33	21	147	96
August	12	9	2	4	196	125	17	5	10	14	52	34	289	191
September	4	2	3	3	184	121	10	4	16	16	52	39	269	185
October	3	4	3	–	158	112	13	4	12	18	42	24	231	162
November	–	–	–	–	195	157	18	8	12	12	54	21	279	198
December	–	–	–	4	227	123	17	8	8	5	50	36	302	176
YEAR	40	26	36	35	2,427	1,655	166	79	158	113	587	385	3,414	2,293
RACES.														
Hindoo of caste	37	16	18	21	1,971	1,385	130	64	127	97	488	317	2,771	1,900
Hindoo, low caste	–	5	15	11	302	185	22	11	19	11	49	31	407	254
Jain	–	–	–	–	20	4	–	–	–	–	1	–	21	4
Moosulman	3	5	2	2	102	56	8	4	9	2	21	13	145	82
Parsee	–	–	–	1	2	–	1	–	–	–	2	–	5	1
Jew	–	–	–	–	3	–	–	–	1	–	1	1	5	1
Christian	–	–	1	–	27	24	5	–	2	3	24	23	59	50
Unknown race or caste	–	–	–	–	–	1	–	–	–	–	1	–	1	1
All Races and Castes	40	26	36	35	2,427	1,655	166	79	158	113	587	385	3,414	2,293

Ratio 6·3 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Surat* during the Year 1866.

Reported Population, 792,638. Area—Square Miles, 2,919.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Cau			
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Fem		
January	5	2	–	–	258	222	19	14	5	10	141			
February	1	–	2	2	230	143	15	18	4	8	149			
March	7	7	5	2	230	195	29	13	8	7	158			
April	3	2	1	2	223	166	19	21	9	6	103			
May	13	5	4	6	160	106	23	11	10	7	147			
June	23	29	8	5	123	99	14	13	6	4	140			
July	14	9	2	–	145	110	15	5	8	9	108			
August	7	5	–	1	170	141	27	28	9	11	136			
September	4	3	–	–	165	157	9	14	9	5	109			
October	3	5	–	–	201	179	22	21	10	3	126			
November	2	2	1	3	230	220	11	18	5	4	136			
December	1	–	6	6	184	185	18	12	6	7	136			
YEAR	83	69	29	27	2,319	1,923	221	188	89	81	1,589	1		
RACES.														
Hindoo of caste	27	13	7	6	728	595	72	55	25	24	535			
Hindoo, low caste	46	48	21	20	1,345	1,139	115	101	52	44	915			
Jain	–	–	–	–	4	5	–	–	–	–	1			
Moosulman	9	8	–	1	220	168	32	31	10	13	119			
Parsee	1	–	1	–	22	16	2	1	2	–	18			
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	–	–	–	1	–	1	–
Unknown race or caste	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	83	69	29	27	2,319	1,923	221	188	89	81	1,589	1,239	4,330	3,527

Ratio 9·9 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Ahmedabad* (only Duskohee Talook) during the Year 1866.

Reported Population, 845,047. Area—Square Miles, 4,402.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	1	143	214	74	54	4	1	13	4	234	274
February	3	2	1	1	140	134	87	47	3	2	9	10	243	196
March	2	2	4	2	137	137	71	46	1	4	15	9	230	200
April	9	2	5	4	115	109	76	62	1	2	9	5	215	184
May	52	24	10	5	98	101	56	42	7	14	11	8	234	194
June	15	19	3	7	54	74	71	45	6	4	6	3	155	152
July	3	1	1	3	82	85	43	54	4	5	4	4	137	152
August	1	2	1	–	101	86	68	57	7	2	6	5	184	152
September	1	–	–	–	111	104	79	57	15	6	8	10	214	177
October	–	–	–	–	136	106	59	50	9	4	9	3	213	163
November	–	1	–	–	144	146	50	63	4	2	3	5	201	217
December	–	1	2	1	108	100	57	59	9	2	9	5	185	168
YEAR	86	54	27	24	1,369	1,396	791	636	70	48	102	71	2,445	2,229
RACES.														
Hindoo of caste	58	42	22	20	1,036	1,065	551	453	54	25	83	61	1,804	1,666
Hindoo, low caste	13	7	3	4	160	152	80	65	8	9	12	4	276	241
Jain	–	–	–	–	25	32	21	22	1	–	1	–	48	54
Moosulman	15	4	2	–	145	145	135	92	7	14	6	6	310	261
Parsee	–	1	–	–	3	1	4	4	–	–	–	–	7	6
Jew	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Christian	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race or caste	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	86	54	27	24	1,369	1,396	791	636	70	48	100	71	2,445	2,229

Ratio 5·5 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Punch Mahal* during the eight months from May to December 1866.

Reported Population, 161,662. Area—Square Miles, ——	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	–	–	–	–	–	–	–	–	–	–	–	–	–	–
April	–	–	–	–	–	–	–	–	–	–	–	–	–	–
May	–	1	20	33	53	45	13	25	4	2	5	2	95	108
June	–	–	16	15	45	26	8	8	6	3	10	4	85	56
July	–	–	17	26	46	32	18	10	7	4	4	7	92	79
August	1	2	24	11	58	49	16	11	7	4	5	5	111	82
September	–	–	5	6	60	51	10	6	3	1	10	4	88	68
October	4	4	10	5	140	107	8	8	3	5	6	2	171	161
November	–	2	7	10	224	195	6	7	2	1	3	7	242	222
December	1	5	5	5	126	107	9	7	6	3	2	2	149	129
YEAR	6	14	104	111	752	642	88	82	38	23	45	33	1,033	905
RACES.														
Hindoo of caste	2	10	41	45	524	458	74	67	25	16	26	24	692	620
Hindoo, low caste	3	2	63	63	159	140	10	11	10	6	8	4	253	226
Jain	–	–	–	–	–	44	–	–	–	–	1	–	1	–
Moosulman	1	2	–	3	69	–	4	4	3	1	8	4	85	58
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race or caste	–	–	–	–	–	–	–	–	–	–	2	1	2	1
All Races and Castes	6	14	104	111	752	642	88	82	38	23	45	33	1,033	905

Ratio 12 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Kaira* during the Year 1866.

Reported Population, 586,606. Area—Square Miles, 1,375.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	188	137	42	30	9	1	109	63	348	231
February	3	2	–	–	184	185	43	31	2	3	114	67	346	288
March	5	2	2	–	202	186	46	25	16	7	117	103	388	323
April	13	18	5	5	210	199	68	51	13	5	108	72	417	350
May	66	42	2	1	190	151	43	32	20	5	106	80	427	311
June	7	8	5	1	135	102	35	31	12	7	68	59	262	208
July	2	2	2	–	162	137	47	30	12	7	92	86	317	262
August	1	–	1	–	190	168	42	47	3	8	104	89	341	312
September	–	1	2	–	180	147	49	36	14	12	67	61	312	257
October	3	–	4	1	249	221	34	34	6	4	110	76	406	336
November	–	1	1	4	314	256	52	35	–	4	111	76	478	376
December	–	–	4	3	214	187	36	24	3	10	103	68	360	292
YEAR	100	76	28	15	2,418	2,076	537	406	110	73	1,209	900	4,402	3,546
RACES.														
Hindoo of caste	95	66	23	14	2,039	1,752	462	359	103	62	1,044	758	3,766	3,011
Hindoo, low caste	1	3	5	1	204	156	43	27	1	6	98	88	352	281
Jain	–	–	–	–	7	15	3	2	–	–	2	4	12	21
Moosulman	4	7	–	–	166	152	29	18	6	5	65	50	270	232
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race or caste	–	–	–	–	2	1	–	–	–	–	–	–	2	1
All Races and Castes	100	76	28	15	2,418	2,076	537	406	110	73	1,209	900	4,402	3,546

Ratio 13·5 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Khandeish* during the Year 1866.

Reported Population, 822,476. Area—Square Miles, 16,597.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	7	–	11	5	225	162	68	44	8	8	53	46	372	265
February	–	–	11	12	290	171	73	47	13	35	55	38	442	303
March	2	1	8	5	173	160	61	32	3	3	59	44	306	245
April	–	1	4	6	110	109	44	33	7	4	41	39	206	192
May	3	2	8	5	139	133	74	47	11	5	30	39	265	231
June	3	3	6	5	127	133	57	38	11	5	44	40	248	224
July	–	10	7	3	133	91	60	36	5	3	29	30	234	173
August	6	5	6	2	184	142	65	52	4	6	43	44	308	251
September	7	5	–	1	196	172	55	55	4	8	39	40	301	281
October	1	1	1	–	243	186	77	36	9	4	29	43	360	270
November	1	3	4	1	348	281	65	47	8	10	33	43	459	385
December	–	–	8	4	227	147	42	39	4	5	39	22	320	217
YEAR	30	31	74	49	2,395	1,887	741	506	87	96	494	468	3,821	3,037
RACES.														
Hindoo of caste	21	26	42	23	1,866	1,477	589	398	67	84	383	365	2,968	2,373
Hindoo, low caste	5	4	24	23	325	274	102	71	13	11	63	59	532	442
Jain	–	–	–	–	3	1	2	–	–	–	–	1	5	
Moosulman	4	1	8	3	198	134	47	37	7	1	47	43	311	21
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race or caste	–	–	–	–	3	1	1	–	–	–	1	–	5	1
All Races and Castes	30	31	74	49	2,395	1,887	741	506	87	96	494	468	3,821	3,037

Ratio 8·3 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Ahmednugur* during the Year 1866.

Reported Population, 1,252,789. Area—Square Miles, 11,179.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	14	6	6	5	487	366	94	79	24	18	111	106	736	580
February	4	4	7	9	366	296	92	56	21	21	76	91	566	477
March	7	5	9	17	381	261	71	41	43	33	85	64	596	421
April	7	5	4	9	274	214	68	42	29	14	74	61	456	345
May	6	7	4	2	290	241	79	51	21	18	127	104	527	423
June	1	1	4	3	251	207	63	54	20	20	96	104	435	389
July	4	3	1	5	286	301	74	70	26	22	114	105	505	506
August	184	177	8	4	442	407	117	82	53	35	142	163	946	868
September	129	148	2	2	396	340	92	69	19	35	146	141	784	735
October	39	32	3	3	361	302	69	50	24	15	112	113	608	515
November	11	4	3	–	390	327	89	56	22	15	106	106	621	508
December	4	7	3	10	341	276	72	51	22	12	102	71	554	427
YEAR	410	399	64	69	4,265	3,538	980	701	324	258	1,291	1,229	7,334	6,194
RACES.														
Hindoo of caste	328	315	39	43	3,296	2,760	807	564	266	224	1,001	921	5,737	4,827
Hindoo, low caste	54	56	15	8	635	480	109	82	36	30	155	157	1,004	813
Jain	2	2	–	2	24	16	5	3	2	–	8	5	41	28
Moosulman	19	17	10	16	291	275	55	48	17	4	122	137	514	497
Parsee	–	–	–	–	3	–	3	–	–	–	–	3	6	3
Jew	–	–	–	–	5	1	–	–	–	–	–	3	5	4
Christian	1	–	–	–	8	3	1	–	–	–	4	2	8	5
Unknown race or caste	6	9	–	–	9	3	–	4	3	–	1	1	19	17
All Races and Castes	410	399	64	69*	4,265	3,538	980	701	324	258	1,291	1,229	7,334	6,194

Ratio 10·8 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Poona* during the Year 1866.

Reported Population, 679,429. Area—Square Miles, 5,250.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	1	–	1	–	402	315	26	31	6	3	58	62	494	411
February	–	1	4	2	379	260	23	22	9	5	50	72	465	362
March	3	2	3	1	272	258	30	19	10	13	77	58	395	351
April	–	–	1	5	235	198	35	18	6	12	78	51	355	284
May	4	3	7	5	297	247	28	23	7	3	86	78	429	359
June	1	–	1	2	238	175	32	26	9	4	119	84	400	291
July	1	1	4	1	254	219	32	23	11	9	95	84	397	337
August	53	62	8	10	328	293	35	31	10	17	142	143	576	556
September	12	9	7	2	320	271	35	41	10	9	114	100	498	432
October	2	2	1	1	298	258	39	29	13	9	80	75	433	374
November	1	–	–	31	295	240	38	26	10	10	57	79	401	386
December	3	–	13	7	270	225	37	27	5	5	82	70	410	334
YEAR	81	80	50	67	3,588	2,959	390	316	106	99	1,038	956	5,253	4,477
RACES.														
Hindoo of caste	69	62	48	65	3,013	2,486	328	276	88	83	867	809	4,413	3,781
Hindoo, low caste	10	15	1	2	416	348	47	28	15	12	98	95	587	500
Jain	–	–	–	–	7	3	–	–	1	1	3	–	11	4
Moosulman	2	3	1	–	151	122	15	12	2	3	68	50	239	190
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	1	–	–	–	–	–	2	2	3	2
Unknown race or caste	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	81	80	50	67	3,588	2,959	390	316	106	99	1,038	956	5,253	4,477

Ratio 14·3 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Sholapoor* during the Year 1866.

Reported Population, 634,867. Area—Square Miles, 4,000.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	5	1	105	77	42	38	14	9	49	36	215	161
February	1	3	2	3	73	47	24	24	1	4	35	28	136	109
March	–	1	2	1	87	86	33	21	4	8	37	40	163	157
April	1	–	4	4	73	97	19	26	9	17	55	55	161	199
May	2	–	7	3	113	89	41	23	61	39	63	66	287	220
June	41	26	6	7	100	81	37	34	38	26	34	31	256	205
July	140	113	5	5	120	93	66	44	4	8	54	37	389	300
August	508	441	3	3	173	182	112	98	26	24	115	141	937	889
September	249	190	10	4	195	193	156	154	20	24	124	118	754	683
October	58	42	4	3	164	160	102	89	20	11	87	57	435	362
November	6	7	1	2	138	136	79	57	15	16	44	47	283	265
December	7	5	14	5	123	105	30	39	7	16	30	21	211	191
YEAR	1,013	828	63	41	1,464	1,346	741	647	219	202	727	677	4,227	3,741
RACES.														
Hindoo of caste	839	693	54	36	1,248	1,173	631	545	192	176	621	575	3,585	3,198
Hindoo, low caste	98	77	6	5	110	80	54	53	18	16	56	56	342	287
Jain	7	3	1	–	7	4	1	4	–	–	6	2	22	13
Moosulman	68	52	2	–	95	89	55	43	9	9	42	42	271	235
Parsee	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	1	–	–	–	–	–	1
Unknown race or caste	1	3	–	–	4	–	–	1	–	1	2	1	7	6
All Races and Castes	1,013	828	63	41	1,464	1,346	741	647	219	202	727	677	4,227	3,741

Ratio 12·5 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Sattara* during the Year 1866.

Reported Population, 858,622. Area—Square Miles, 7,480.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	2	1	553	507	78	72	16	13	113	109	762	702
February	2	1	–	2	414	407	60	61	14	12	113	113	603	596
March	1	–	4	–	409	358	68	44	11	13	114	107	607	522
April	4	1	3	6	378	346	53	61	10	12	120	110	568	536
May	6	4	–	2	475	378	96	61	11	7	127	115	715	567
June	9	10	3	1	350	278	97	87	37	17	134	110	630	503
July	31	24	1	3	380	399	143	139	28	20	138	117	721	702
August	273	267	2	1	584	526	338	263	15	25	158	176	1,370	1,258
September	188	206	3	3	547	516	240	264	10	16	146	174	1,134	1,179
October	46	45	2	5	494	496	184	174	22	17	132	156	880	893
November	4	–	–	1	420	455	107	104	14	11	110	97	655	668
December	6	6	3	1	361	324	63	57	6	3	107	89	546	480
YEAR	570	564	23	26	5,365	4,990	1,527	1,387	194	166	1,512	1,473	9,191	8,606
RACES.														
Hindoo of caste	509	502	22	22	4,686	4,404	1,349	1,240	175	148	1,345	1,301	8,086	7,617
Hindoo, low caste	34	39	1	2	473	410	94	81	13	9	107	104	722	645
Jain	5	4	–	–	35	22	24	21	3	5	13	18	80	70
Moosulman	20	19	–	2	164	144	58	43	3	4	46	49	291	261
Parsee	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Jew	1	–	–	–	3	2	–	–	–	–	–	1	4	3
Christian	–	–	–	–	2	3	2	2	–	–	1	–	5	5
Unknown race or caste	1	–	–	–	2	4	–	–	–	–	–	–	3	4
All Races and Castes	570	564	23	26	5,365	4,990	1,527	1,387	194	166	1,512	1,473	9,191	8,606

Ratio 20·7 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Kuladghee* during the Year 1866.

Reported Population, 563,123. Area—Square Miles, 6,500.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	1	9	14	111	63	34	17	4	5	61	33	219	133
February	–	–	47	44	89	68	40	22	2	8	47	42	225	184
March	9	3	35	38	186	142	53	32	7	10	96	58	386	283
April	250	221	23	27	203	165	43	41	4	5	104	80	627	539
May	404	297	33	34	200	151	65	45	10	14	175	155	887	696
June	622	494	31	23	197	146	75	76	4	2	126	101	1,055	842
July	288	294	9	13	197	151	132	105	8	6	140	132	774	701
August	304	276	21	17	249	232	265	202	12	19	177	132	1,028	878
September	180	175	3	3	239	261	330	268	17	12	185	189	954	908
October	29	37	16	15	295	250	241	238	15	19	146	99	742	658
November	6	5	11	6	258	246	158	132	2	7	66	64	501	460
December	–	1	10	17	183	124	101	69	8	9	51	45	353	265
YEAR	2,092	1,804	248	251	2,407	1,999	1,537	1,247	93	116	1,374	1,130	7,751	6,547
RACES.														
Hindoo of caste	1,807	1,534	212	210	2,131	1,744	1,367	1,100	82	107	1,220	994	6,819	5,689
Hindoo, low caste	57	42	15	15	65	69	25	33	–	1	42	37	204	197
Jain	8	8	–	1	15	11	5	3	–	–	11	2	39	25
Moosulman	210	210	19	24	188	171	131	107	10	8	95	92	653	612
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	4	2	–	–	1	–	2	–	–	–	1	–	8	2
Unknown race or caste	6	8	2	1	7	4	7	4	1	–	5	5	28	22
All Races and Castes	2,092	1,804	248	251	2,407	1,999	1,537	1,247	93	116	1,374	1,130	7,751	6,547

Ratio 25·4 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Belgaum* during the Year 1866.

Reported Population, 707,537. Area—Square Miles, 4,480.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	40	25	301	175	19	13	9	6	162	124	531	343
February	–	–	21	24	244	155	16	6	8	5	142	133	431	323
March	–	–	21	27	307	182	14	10	15	8	189	135	546	362
April	9	4	23	17	270	189	23	11	9	3	176	149	510	373
May	125	89	17	13	304	207	29	19	4	6	219	174	698	508
June	248	201	15	10	243	170	20	7	10	6	224	177	760	571
July	188	151	11	9	206	170	19	13	8	6	263	220	695	569
August	321	265	2	4	306	176	36	17	15	10	356	309	1,036	781
September	99	91	5	3	241	171	24	7	12	9	320	232	701	513
October	100	68	7	3	292	193	28	17	9	11	244	210	680	502
November	1	1	2	2	310	232	31	12	7	5	209	144	560	396
December	1	–	22	29	284	190	16	10	7	10	145	94	475	333
YEAR	1,092	870	186	166	3,308	2,210	275	142	113	85	2,649	2,101	7,623	5,574
RACES.														
Hindoo of caste	816	643	137	138	2,710	1,760	218	111	85	71	2,034	1,621	6,000	4,344
Hindoo, low caste	139	115	19	9	284	218	31	11	11	6	260	181	744	540
Jain	50	38	8	2	94	76	9	9	6	3	204	176	371	304
Moosulman	82	69	22	17	201	143	16	11	11	4	148	123	480	367
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	5	5	–	–	19	13	1	–	–	1	2	–	27	19
Unknown race or caste	–	–	–	–	–	–	–	–	–	–	1	–	1	–
All Races and Castes	1,092	870	186	166	3,308	2,210	275	142	113	85	2,649	2,101	7,623	5,574

Ratio 18·6 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Dharwar* during the Year 1866.

Reported Population, 782,465. Area—Square Miles, 6,070.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	33	31	21	20	352	245	101	63	9	10	198	166	714	535
February	543	413	8	14	372	244	139	89	6	10	150	140	1,218	910
March	1,365	1,007	22	21	327	217	115	110	9	6	197	165	2,035	1,526
April	1,096	891	17	29	271	190	116	83	7	6	219	153	1,726	1,352
May	1,611	1,220	18	23	244	173	111	96	18	10	183	161	2,185	1,683
June	1,072	887	23	17	210	189	121	84	9	6	193	148	1,628	1,281
July	329	315	20	19	193	190	111	100	8	11	215	232	876	867
August	136	112	20	14	237	182	158	130	35	23	235	224	821	675
September	72	58	9	12	224	252	125	107	10	9	218	215	658	653
October	34	27	10	11	304	247	115	97	15	24	218	166	696	572
November	–	–	12	6	362	310	107	89	11	15	145	183	637	603
December	–	–	10	17	349	299	81	60	9	7	121	121	570	504
YEAR	6,291	490	190	203	3,445	2,738	1,400	1,108	146	137	2,292	2,074	13,764	11,161
RACES.														
Hindoo of caste	4,687	3,613	144	156	2,701	2,127	1,118	857	122	111	1,759	1,602	10,531	8,466
Hindoo, low caste	778	612	22	25	347	300	130	129	9	15	251	230	1,537	1,311
Jain	37	29	2	2	26	25	9	5	1	1	23	14	98	76
Moosulman	783	642	22	20	369	284	142	117	13	9	257	226	1,586	1,298
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	1	2	–	–	–	1	–	–	1	3
Unknown race or caste	6	5	–	–	1	–	1	–	1	–	2	2	11	7
All Races and Castes	6,291	4,901	190	203	3,445	2,738	1,400	1,108	146	137	2,299	2,074	13,764	11,161

Ratio 31·8 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Canara* during the Year 1866.

Reported Population, 361,013. Area—Square Miles, 4,300.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	18	10	5	1	314	222	5	7	8	2	61	48	411	290
February	10	2	13	5	285	212	22	14	7	5	68	53	405	291
March	7	5	14	4	260	206	37	16	7	5	72	36	397	272
April	65	53	13	13	190	119	31	13	12	10	49	39	360	247
May	52	29	7	8	215	151	20	18	3	2	64	49	361	257
June	115	93	7	7	161	142	45	30	13	6	52	56	393	334
July	27	38	3	4	181	197	33	30	8	12	44	60	296	341
August	40	29	4	4	224	213	33	34	3	3	73	69	377	352
September	76	57	–	3	199	149	39	23	10	3	67	43	391	278
October	52	47	1	3	221	154	20	20	63	74	58	54	415	352
November	14	16	1	–	206	185	20	16	18	18	51	47	310	282
December	3	1	5	1	320	230	19	15	6	6	77	60	430	313
YEAR	479	380	73	53	2,776	2,180	324	236	158	146	736	614	4,546	3,609
RACES.														
Hindoo of caste	281	223	59	38	2,206	1,770	236	163	107	86	585	494	3,474	2,774
Hindoo, low caste	94	65	8	7	278	201	46	39	11	8	78	67	515	387
Jain	14	12	2	3	99	77	19	13	5	–	18	23	157	128
Moosulman	73	72	2	2	122	80	17	18	33	52	30	24	277	248
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	15	8	2	2	63	49	6	3	2	–	20	6	108	68
Unknown race or caste	2	–	–	1	8	3	–	–	–	–	5	–	15	4
All Races and Castes	479	380	73	53	2,776	2,180	324	236	158	146	736	614	4,546	3,609

Ratio 22·6 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Rutnaghiree* during the Year 1866.

Reported Population, 685,372. Area—Square Miles, 5,898.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Femal
January	3	3	3	1	310	*244	39	13	19	5	165	152	539	418
February	9	6	3	2	292	241	29	17	6	6	178	140	517	412
March	19	11	14	9	388	338	43	19	18	8	201	175	683	560
April	8	8	8	7	324	290	43	22	11	4	151	153	545	484
May	10	6	7	6	297	262	44	23	20	7	166	163	544	467
June	7	4	6	3	284	241	31	29	16	11	175	157	519	445
July	11	7	2	10	334	315	49	21	13	18	160	192	569	563
August	34	34	8	5	440	443	43	29	14	11	274	219	813	741
September	12	2	10	4	333	296	37	18	10	7	190	195	592	522
October	7	4	11	4	256	254	34	11	13	15	139	159	460	447
November	3	6	6	9	235	237	35	13	8	7	132	120	419	392
December	2	1	11	10	284	251	22	19	6	9	141	148	466	438
YEAR	125	92	89	70	3,777	3,412	449	234	154	108	2,072	1,973	6,666	5,889
RACES.														
Hindoo of caste	95	62	69	66	3,003	2,792	369	183	129	96	1,809	1,740	5,474	4,939
Hindoo, low caste	23	26	13	3	534	433	57	34	15	8	177	166	819	670
Jain	–	–	–	–	2	6	–	–	–	–	13	12	15	18
Moosulman	7	4	7	1	230	179	22	15	9	4	67	51	342	254
Parsee	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	7	1	1	2	1	–	6	4	15	7
Unknown race or caste	–	–	–	–	–	1	–	–	–	–	–	–	–	1
All Races and Castes	125	92	89	70	3,777	3,412	449	234	154	108	2,072	1,973	6,666	5,889

Ratio, 18·3 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Kurachee* during the Year 1866.

Reported Population, 340,000. Area—Square Miles, 19,240.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	3	–	2	–	224	126	24	12	4	–	28	16	285	154
February	–	–	7	6	127	82	14	10	–	2	12	9	160	109
March	–	–	2	2	146	87	17	15	7	1	56	41	228	146
April	2	1	6	6	115	73	10	4	6	2	57	37	196	123
May	2	–	–	3	88	50	6	7	5	3	33	26	134	89
June	–	–	9	10	94	66	5	9	16	8	22	6	146	99
July	–	–	2	3	88	50	6	3	15	5	29	19	140	80
August	–	–	–	–	62	54	3	6	79	52	37	23	181	135
September	–	–	–	–	82	44	7	1	15	2	16	10	120	57
October	–	–	1	–	107	66	7	6	9	4	17	9	141	85
November	–	–	1	–	137	114	20	19	6	2	14	16	178	151
December	–	–	1	–	158	120	2	–	8	–	12	7	181	127
YEAR	7	1	31	30	1,428	932	121	92	170	81	333	219	2,019	1,355
RACES.														
Hindoo of caste	–	–	10	13	329	219	24	32	14	2	93	65	470	331
Hindoo, low caste	–	–	1	–	34	24	8	1	–	3	17	9	60	37
Jain	–	–	–	–	3	4	–	–	–	–	1	–	4	4
Moosulman	7	1	20	17	1,055	682	88	59	152	76	220	144	1,542	979
Parsee	–	–	–	–	1	1	–	–	–	–	1	–	2	1
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	2	1	1	–	3	–	1	1	7	2
Unknown race or caste	–	–	–	–	4	1	–	–	1	–	–	–	5	1
All Races and Castes	7	1	31	30	1,428	932	121	92	170	81	333	219	2,090	1,355

Ratio, 10·0 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Hyderabad* during the Year 1866.

Reported Population, 630,000. Area—Square Miles, 10,774.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	1	233	160	17	11	13	6	64	74	327	252
February	–	–	–	–	170	106	25	11	6	2	42	29	243	148
March	–	–	5	1	172	117	84	70	4	3	57	38	322	229
April	1	–	14	6	224	168	24	19	2	1	63	52	328	246
May	–	–	13	8	138	86	26	19	4	2	63	49	244	164
June	–	–	5	9	129	105	19	23	15	9	49	34	217	180
July	–	–	11	1	104	57	9	12	20	6	55	25	199	101
August	–	–	1	4	99	70	10	6	21	20	25	18	156	118
September	–	–	2	1	98	70	17	16	18	3	41	29	176	119
October	–	–	5	4	132	94	5	4	15	4	44	29	201	135
November	–	–	2	3	136	111	7	2	12	3	59	57	216	176
December	–	–	15	9	200	136	13	13	4	4	16	18	248	180
YEAR	1	–	73	47	1,835	1,280	256	206	134	63	578	452	2,877	2,048
RACES.														
Hindoo of caste	–	–	40	29	652	463	118	98	28	21	217	158	1,055	769
Hindoo, low caste	–	–	–	–	20	13	–	2	–	–	5	1	25	16
Jain	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulman	1	–	33	18	1,162	804	138	106	106	42	356	293	1,796	1,263
Parsee	–	–	–	–	3	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race or caste	–	–	–	–	–	–	–	–	–	–	–	–	1	–
All Races and Castes	1	–	73	47	1,835	1,280	256	206	134	63	578	452	2,877	2,048

Ratio 7·8 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Shikarpoor* during the Year 1866.

Reported Population, 650,300. Area—Square Miles, 9,042.	Cholera.		Smal-lpox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	2	1	32	25	43	21	1	–	39	23	117	70
February	–	–	4	3	55	46	6	1	3	1	44	38	112	89
March	–	–	3	2	72	59	5	4	2	1	37	25	119	91
April	–	–	7	3	64	33	7	3	–	–	21	13	99	52
May	–	–	1	2	22	23	21	23	–	1	7	11	51	60
June	–	–	4	4	37	29	5	–	2	1	17	9	65	43
July	–	–	2	–	28	27	5	1	1	2	10	3	46	33
August	–	–	1	–	34	19	2	1	4	1	7	8	48	29
September	–	–	–	–	38	30	1	–	1	–	7	13	47	43
October	–	–	1	3	63	67	3	–	1	1	17	10	85	81
November	–	–	1	–	68	84	2	1	1	–	5	18	77	103
December	–	–	–	–	94	79	9	1	–	1	17	21	120	102
YEAR	–	–	26	18	607	521	109	56	16	9	228	192	986	796
RACES.														
Hindoo of caste	–	–	12	9	326	252	49	37	11	6	141	133	539	437
Hindoo, low caste	–	–	1	–	1	–	–	–	–	–	–	1	2	1
Jain	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulman	–	–	13	9	280	269	60	19	5	3	87	58	445	358
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race or caste	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	–	–	26	18	607	521	109	56	16	9	228	192	986	796

Ratio 2·7 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Upper Sind*, during the Year 1866.

Reported Population, 47,955. Area—Square Miles, 2,147.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	26	9	10	10	1	–	–	–	37	19
February	–	–	–	–	30	28	–	–	1	–	1	2	32	30
March	–	–	4	1	12	8	23	14	–	1	–	–	39	24
April	–	–	9	4	22	8	7	8	–	–	1	–	39	20
May	–	–	4	3	19	12	–	–	1	1	5	5	29	21
June	–	–	2	–	13	8	4	2	–	–	14	3	33	13
July	–	–	–	–	12	7	10	5	7	1	1	–	30	13
August	–	–	3	1	12	1	5	2	1	–	–	–	21	4
September	–	–	–	–	15	13	3	3	1	–	–	–	19	16
October	–	–	–	–	26	20	9	8	–	–	–	–	35	28
November	–	–	–	–	38	38	1	2	–	1	–	–	39	41
December	–	–	–	–	24	28	5	3	–	1	–	–	29	32
YEAR	–	–	22	9	249	180	77	57	12	5	22	10	382	261
RACES.														
Hindoo of caste	–	–	9	4	82	82	18	10	1	1	13	6	123	103
Hindoo, low caste	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Jain	–	–	–	–	6	1	–	–	–	–	–	–	6	1
Moosulman	–	–	12	5	161	97	59	47	10	4	9	3	251	156
Parsee	–	–	1	–	–	–	–	–	–	–	–	–	1	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	–	1	–	–	–	1	–
Unknown race or caste	–	–	–	–	–	–	–	–	–	–	–	–	–	–
All Races and Castes	–	–	22	9	249	180	77	57	12	5	22	10	382	261

Ratio 13·4 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Thur* and *Parkur* during the Year 1866.

Reported Population, 127,035. Area—Square Miles, 13,000.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	–	–	–	–	60	53	8	2	1	–	–	1	69	56
February	–	–	5	7	79	68	2	5	–	–	–	1	86	81
March	–	–	–	–	41	30	1	–	–	–	7	8	49	38
April	–	–	2	3	32	20	8	7	–	1	1	2	43	33
May	–	–	–	2	14	9	4	3	–	–	8	2	26	16
June	–	–	–	–	17	13	3	2	3	–	8	5	31	20
July	–	–	–	–	15	12	1	1	–	1	1	4	17	18
August	–	–	1	–	14	9	–	–	2	4	5	1	22	14
September	–	–	–	–	[illegible]	7	–	–	–	1	–	–	1	8
October	–	–	–	–	5	2	1	–	1	–	–	–	7	2
November	–	–	–	–	5	3	–	–	–	–	–	–	5	3
December	–	–	–	–	13	6	1	–	2	–	–	–	16	6
YEAR	–	–	8	12	296	232	29	20	9	7	30	24	372	295
RACES.														
Hindoo of caste	–	–	2	1	131	109	5	4	2	4	18	9	158	127
Hindoo, low caste	–	–	5	6	57	31	1	2	1	1	4	8	68	48
Jain	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moosulman	–	–	1	5	106	92	21	13	5	2	8	7	141	119
Parsee	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jew	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Christian	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Unknown race or caste	–	–	–	–	2	–	2	1	1	–	–	–	5	1
All Races and Castes	–	–	8	12	296	232	29	20	9	7	30	24	372	295

Ratio 5·2 per mille.

RETURN of CASUALTIES by VIOLENCE among the CIVIL POPULATION, reported by the Superintendents of Police in the different Collectorates of the Bombay Presidency during the Year 1866.

	Murder.			Homicide.			Suicide.						Killed by Wild Beasts.	Killed by Snake-bite.	Died from Hydrophobia.	Accidental Deaths.								Found Dead, Cause Uncertain.			Total.	Attempted Suicide.			
							By Drowning.				By other Means.					By Drowning.						In Sea or River.	From other known Cause.					By Drowning in Well or Tank.		By other Means.	
							In Well.		In Tank.							In Well.			In Tank.												
	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Men.	Women.	Men.	Women.	Persons.	Persons.	Persons.	Men.	Women.	Children.	Men.	Women.	Children.	Persons.	Persons.	Men.	Women.	Children.		Men.	Women.	Men.	Women.
Tanna	13	2	–	–	–	1	4	7	2	–	5	6	12	50	–	22	72	10	8	6	6	68	103	7	1	–	405	–	–	–	–
Surat	10	4	2	–	–	–	11	16	1	5	2	1	8	41	14	7	20	24	1	2	31	49	85	–	–	–	334	–	3	–	–
Kaira	6	–	3	–	–	–	15	11	1	–	10	7	–	41	10	9	12	15	7	2	40	5	81	–	1	–	276	5	5	–	3
Ahmedabad	11	–	–	–	–	–	4	12	–	–	8	6	–	32	5	9	12	6	2	3	34	7	61	1	–	–	213	–	–	–	–
Punch Mahals	9	–	1	–	–	–	2	1	1	–	7	2	6	27	–	4	1	1	–	–	2	1	27	1	–	1	94	–	1	1	–
Khandeish	1	1	1	1	–	–	10	16	1	–	4	1	9	15	1	24	20	19	2	3	7	55	46	2	–	–	239	1	1	1	–
Ahmednugur	5	2	1	–	–	–	4	11	–	–	–	2	–	3	–	13	21	8	–	–	5	15	11	2	–	–	103	–	–	–	–
Poona	2	3	1	4	–	–	3	9	–	1	7	4	2	16	4	18	53	20	2	6	2	54	52	7	2	5	277	–	2	3	2
Sholapoor	2	–	1	4	1	1	2	8	–	–	4	1	1	8	3	21	39	16	–	1	–	12	56	5	–	–	186	–	2	1	–
Nasik	2	3	1	1	1	1	–	2	–	–	3	1	–	9	–	4	10	7	4	–	2	16	20	–	–	–	87	–	–	–	–
Satara	5	4	1	–	–	–	4	10	2	1	14	5	15	30	1	20	38	40	3	1	1	45	57	1	–	1	299	3	1	1	3
Kuladghee	4	3	–	3	–	–	3	27	–	5	18	11	–	7	–	6	23	15	–	–	4	15	57	1	–	–	202	1	–	2	–
Belgaum	11	4	7	2	1	–	4	21	2	3	15	10	3	20	–	13	27	30	3	2	8	21	53	4	1	–	265	–	–	–	–
Dharwar	10	4	5	2	–	–	4	17	6	12	21	9	1	16	–	6	10	1	13	20	29	17	38	6	–	–	247	–	–	–	–
Canara	–	–	–	–	–	–	–	3	–	3	3	3	7	26	–	2	4	21	12	4	5	33	53	3	–	–	182	–	–	–	1
Rutnaghiree	5	2	–	–	–	–	2	4	–	2	9	3	–	90	–	1	13	1	3	4	5	91	46	–	–	–	281	1	–	–	–
Kurachee	5	3	–	3	1	1	1	–	–	–	5	3	4	73	9	–	–	3	9	11	27	160	81	–	–	–	399	–	–	4	1
Hyderabad	8	2	–	2	–	–	–	–	2	1	1	6	3	127	9	7	–	1	22	5	45	23	90	3	3	1	361	1	1	–	4
Shikarpoor	6	8	–	4	–	–	–	1	–	–	1	2	–	25	6	1	1	4	7	3	22	69	51	5	1	–	217	–	–	2	2
Upper Sind	–	1	–	–	–	–	1	–	–	–	1	–	–	1	5	–	2	–	1	1	2	–	2	1	–	–	18	–	–	–	–
Thur and Parkur	1	–	–	–	–	1	–	–	4	–	4	4	–	17	–	6	1	–	4	–	3	–	137	2	–	2	186	–	–	–	3

GAOLS.

Construction.

It was recommended that, as the superficial space was restricted by the Government of India to 40 feet per man, prison wards should be only 16 feet wide, which would give 10 feet of wall to two men, or, after deducting $3\frac{1}{2}$ feet for doorway, $6\frac{1}{2}$ feet.

Statistics.

With a view to a more correct exhibition of the sickness and mortality among prisoners, a representation was made to Government that it was desirable that instances of the release of prisoners on the score of health, before the period of their sentences had expired, should be noted in the returns, and the proposition was forwarded to the medical department for adoption.

Kaira.—There was much sickness and large mortality from fever in this gaol.

Ahmedabad.—A reference regarding the large sickness and mortality in this gaol was made by Government early in the year, upon which the Commission visited Ahmedabad and made a special report.

In January and February the sickness continued great, after which the general health seems to have much improved. Eleven deaths occurred in January, and 15 in the following three months.

Hyderabad.—There has been much sickness and a very large mortality in this gaol for two years. January and February were here too the most sickly months. Fever and bowel affections prevailed to a great extent, and 67 deaths occurred among some 400 men in those two months. Afterwards the health of the prisoners seems to have rapidly improved and become satisfactory.

Yerowda.—The great sickness and mortality in this gaol, among the prisoners who were natives of Guzerat, attracted notice, and led to the prisoners, who had been brought from that province for employment on the works at Yerowda, being returned to Ahmedabad.

Sickness and Deaths in Gaols in 1866.

Gaols.	Average Number of Prisoners.	Daily Number of Sick.	Admissions into Hospital during the Year.	Deaths from all Causes.	Deaths from: Cholera.	Smallpox.	Fever.	Dysentery.	Diarrhœa.	Hepatitis.	Icterus.	Scorbutus.	Phthisis.	Atrophia.	Death from all Causes per Mille
Bombay	407	14·	474	4	–	–	2	–	2	–	–	–	–	–	9·8
Surat	157	4·4	177	12	–	–	5	1	3	–	–	–	–	1	76·6
Kaira	201	25·	677	33	–	–	14	3	9	1	–	–	–	2	164·2
Ahmedabad	394	28·4	674	35	1	–	28	–	–	–	–	–	1	1	89·08
Rajkote	60	8·4	226	1	–	–	–	–	–	–	–	–	–	–	16·6
Dohud	194	12·1	422	12	–	–	3	1	3	–	–	–	–	1	61·9
Dhoolia	245	13·8	271	6	–	–	–	–	–	1	–	–	1	1	24·25
Ahmednugur	187	8·7	272	8	1	–	1	1	2	–	–	–	–	1	42·2
Poona	415	10·6	338	13	2	–	3	–	5	–	–	–	–	–	31·3
Satara	134	4·8	133	5	–	–	3	–	–	–	1	–	–	1	37·3
Kolhapoor	136	4·7	130	4	1	–	–	2	–	–	–	–	–	–	29·4
Sholapoor	122·	8·6	209	1	–	–	1	–	–	–	–	–	–	–	8·2
Kuladghee	162	6·3	257	3	–	–	–	–	–	–	–	–	1	–	18·5
Dharwar	475	11·3	278	21	–	–	6	2	2	–	1	–	–	8	44·2
Honore	35	1·3	59	–	–	–	–	–	–	–	–	–	–	–	–
Sawuntwaree	38	2·7	57	–	–	–	–	–	–	–	–	–	–	–	–
Rutnaghiree	212	13·2	366	14	–	–	9	–	–	–	–	–	–	–	66·0
Tanna	287	17·9	550	9	–	–	1	3	–	–	–	1	1	1	31·4
Kurachee	637	28·6	660	19	–	–	10	–	3	–	–	–	–	–	29·8
Hyderabad	324	11·4	447	78	–	–	28	25	16	–	2	–	–	1	240·7
Shikarpoor	524	19·7	663	33	–	–	11	2	1	–	–	–	1	1	63·0
Aden	167	7·9	334	3	–	–	–	–	–	–	–	–	–	1	18·0
Total	5,513	263·8	7,674	314	5	–	125	40	46	2	4	1	6	20	56·9
Subsidiary Gaols, Gangs, and Lock-ups:															
Yerowda	851	61·3	1,926	177	–	–	82	14	38	–	8	1	–	20	208·0
Belgaum	58	1·4	37	–	–	–	–	–	–	–	–	–	–	–	–
Karwar	132	7·	257	1	–	–	1	–	–	–	–	–	–	–	7·6
Sukur	318	33·6	1,097	29	–	–	18	2	–	–	–	–	–	–	91·2
Thur and Parkur	177	6·7	317	2	–	–	2	–	–	–	–	–	–	–	11·3
Mitrow Canal	96	5·4	227	9	–	–	7	–	–	–	–	–	–	–	93·7
Sadra	6	0·4	20	1	1	–	–	–	–	–	–	–	–	–	166·7
Total	1,638	115·8	3,881	219	1	–	110	16	38	–	8	1	–	20	133·7

MISCELLANEA.

Commission.

THE only change in the constitution of the Commission during the year was in the office of secretary, the duties of which were relinquished by Dr. Beatty and assumed by Dr. Gordon Asher in May.

Inspections.

The places noted in the margin were visited by the Commission during the year, and the reports rendered to Government form part of the Appendix.

Ahmedabad, Baroda, Bulsar and Teethul, Tanna and Kurachee.

Standard Plans.

Hospital Guard-room.

Lunatic Asylum.

Voluntary Workshops.

Hospital Stable.

It having been found that time and labour were sometimes wasted in the preparation, on standard designs, of plans, which were rejected as insuitable to the requirements of this Presidency, Government adopted the practice of forwarding to the Commission, for report, standard plans received from the Government of India. Those noted in the margin were reported on, and the remarks were printed and circulated with the plans for the information and guidance of departments.

President.

The services of the President were made avail of in special committees convened to consider the subjects as follows:

Bombay drainage outfall.

Sites and plans for hospitals at Bombay.

Site for a convict gaol, Bombay.

Site for barracks at Kirkee.

Site for a military prison at Paunchgunnee.

Investigation into the health of prisoners from Guzerat at Yerowda.

Meteorology.

Opportunity was taken of recommending to Government that the period of observation of rain-fall should be extended from the middle of May to the middle of November at all places where records of the rain-fall are kept, and where practicable, as at railway stations, that observations should extend throughout the year. Government approved of the proposal, and issued instructions accordingly.

APPENDIX.

APPENDIX I.—BARRACK DISTRIBUTION RETURN.

DIVISION OF THE ARMY.	STATION.	LINES.	CORPS.	Description of Barrack Accommodation.	Number of Single Men for whom there is Accommodation.	Staff Serjeants' Quarters. Number and Class.	Staff Serjeants' Quarters. Description.	Family Quarters. No.	Family Quarters. Description.	Library or Reading Room.	Gymnasium.	Recreation Room.	Theatre.	Workshops.
Bombay Brigade	Colaba	Infantry	Head Quarters, Wing, 4th K. O. Regiment.	6, single storied (condemned).	330	2 A.	Permanent	40	Semi-permanent.	1				One old library.
				2, single storied (temporary).	88									
		Sanitarium	Sanitarium	2, single storied	60	1 A.	ditto	12	Temporary	1				
	Khandalla	Old Depôt	Unoccupied	2, single storied	146	2 A.	ditto	—	—	—				
Poona Division	Poona	Horse Artillery	109th Regiment	1, upper storied (both occupied).	72	5 A.	ditto	20	Temporary	One, used by Normal School.				Part of gun-shed used.
				6, single storied (condemned).	102	1 B.	—	9	ditto.					
		R. F. Infantry, Wanowree.	96th Regiment, Head Quarters, and eight Companies.	8, upper storied (both occupied).	488	2 A.	ditto	80	Permanent	—	—	One, temporary.	—	ditto
						10 B.	—	—	—	Portion of School.				
		L. F. Infantry, Ghorepooree.	45th Regiment	24, semi-permanent, single storied.	684	5 A.	ditto	80	ditto	One, with Schoolroom.				1
				5, temporary, single storied (new).	216	10 B.								
		Depôt, Wanowree	109th Regiment	11	264									
			General Depôt	1, 24 men each, condemned barracks	24									
			Bishop's School	1	24	2 B.	Condemned	20	Temporary	1				
			Native Normal School	1	24									
		No particular lines	109th Regiment	5, new, temporary	210									
			96th ditto	2, ditto - ditto	84									
			General Depôt	2, ditto - ditto	84									
		Sappers	Sappers and Miners	Permanent, single storied	17	1 A.	Permanent	26	Permanent	1				1
	Kirkee	Artillery	Head Quarters, E. Brigade	9, permanent (new)	180	—	ditto	80	ditto	1			Barrack used (one of the 24).	1
			3 F. Batteries	4, ditto (old)	104	2 A.								
			2 Garrison Batteries	11, temporary (old)	286	7 B.								
	Nuggur	Cavalry	3rd Dragoon Guards	12, single storied, permanent.	360	2 A. 7 B.	ditto	80	ditto	Serjeants' mess used.			1	1
		Artillery	B. Battery, E. Brigade, R. H. A.	Occupy three of the cavalry barracks.	12	1 B.	ditto	7	Temporary	—				
	Sholapoor	Artillery	E. Battery, 18th Brigade, R. A.	3, permanent	84	2 A.	ditto	14	ditto	—				
				1, temporary	21	1 B.	—	5	Permanent.					
	Sattara	Infantry	4th K. O. Regiment, three Companies.	4, permanent	84									
				1, semi-permanent	48	2 A.	ditto	24	ditto	An old barrack used.				
				1, upper storied (Hill Fort).	50									
	Aseerghur	Infantry	4th K. O. Regiment, two Companies.	2, permanent	74	—	—	6	Temporary	—				
				1, temporary	42									
	Poorundhur	Sanitarium	Sanitarium	4, permanent	103	1 A.	Permanent (canteen under same roof).	12	Permanent	1				
Mhow Division	Mhow	Artillery	Head Quarter, 21st Brigade.	2, permanent	168	2 A.	Permanent	6	ditto	Orderly-room used.				
			1 F. Battery	—	—	—	—	7	Temporary.					
			1 G. Battery	2, temporary	80									
		Cavalry	11th Hussars	2, upper storied (both occupied).	320	18 B.	ditto	50	Permanent	Barrack-room used.				1
		Infantry	95th Regiment, nine Companies, with Head Quarters.	3, upper storied (both occupied).	480	14 B.	ditto	86	ditto	ditto	Barrack-room used.		Two, barrack-room used.	2
	Neemuch	Artillery	F. Battery, 18th Brigade, R. A.	2, permanent	128	4 A.	ditto	15	ditto	ditto				1
		Infantry	96th Regiment, two Companies.	8, permanent (condemned)	424	5 A.	ditto	30	Temporary	—				1

APPENDIX.

APPENDIX I.—BARRACK DISTRIBUTION RETURN.

Skittle-alleys.	Fives Court.	Plunge Baths.	Canteens.	Guard Rooms.	School Rooms.	Serjeants' Mess.	Officers' Quarters.	Hospital.	Female Hospital.	Quarters for Hospital Serjeant, Steward, Apothecary, Assistant Apothecary, &c.	Hospital Guard Room.	Cells.	Present Strength of Married and Single Rank and File, including Sick in Hospital, and Men on Guard Duty.	REMARKS.
2	1	- -	One, with coffee room and store-room.	One, 13 men	One, old church	One, with orderly room.	22	One, 76 beds	One, 8 beds	3	One, 4 men	19	450	
- -	-	- -	One, with store-room.	One occupied by staff serjeant.	- - -	- - -	2	One, 48 beds	One, 12 beds	2	- -	Three, used as guard-room.	67	
-	-	- -	1	- -	- - -	- - -	1	One 12 beds	- -	- -	- -	6		
- -	1	One, no water	1	One, 10 men One, 6 men	1	1	–	One, 12 beds	One, 4 beds -	3	- -	6	768	Cubic space of the upper-storied barrack insufficient. 474 men accommodated elsewhere (*see* depôt and new temporary barracks).
1	1	- -	1	One, 9 men One, 5 men	One, used also as library and theatre.	One, used also as orderly-room.	–	One, 70 beds	One, 6 beds	2	One, 7 men	8	566	84 men accommodated elsewhere.
3	1	1	1	One, 8 men One, ditto. One, ditto. One, 7 men.	One, with library	- ditto -	–	One, 60 beds	One, 8 beds	3	One, 12 men	12	751	Cubic space of the 24 barracks insufficient.
- -	-	- -	One, used as orderly-room.	One, 10 men	1	- - -	–	One, 60 beds	One, 8 beds	3	One, 4 men	12		
-	-	- -	1	One, 4 men	1	1	–	One, 6 beds	One, 4 beds	- -	- -	- -	- None.	
-	1	1	1	One, 7 men One, 4 men.	1	1	–	One, 80 beds	One, 6 beds	3	One, 4 men	12	486	
1	1	1	1	One, 25 men	- - -	1	–	One, 49 beds	One, 8 beds	2	One, 9 men	5	353	
- -	-	1	- - -	One, 4 men	1	- - -	–	One, 25 beds	One, 13 beds (isolation ward).	1	- -	3	121	Accommodated in three of the 12 cavalry barracks.
1	1	- -	One, with coffee shop.	One, 12 men	One, with library	1	–	One, 16 beds	One 5 beds	1	One, 4 men occupied by hospital serjeant.	Quarter-guard veranda, 3.	125	
1	–	1	An old barrack used.	One, 4 men	An old shed used	An old shed used	–	One, 16 beds	- -	1	One, 3 men; occupied by hospital serjeant.	2	205	
1	–	- -	1	One, 7 men	- - -	- - -	–	One, 0 beds	- -	- -	- -	2	100	
- -	-	- -	One, with staff serjeant's quarters.	One, 6 men	- - -	- - -	–	One, 48 beds	One, 6 beds	1	One, 4 men; occupied by apothecary.	2	61	
One, used as ration shed.	1	- -	Shoeing-shed used	One, 5 men	- - -	Portion of old stable.	–	One, 32 beds	One, 4 beds	1	- -	2	170	Includes eight non-commissioned officers' rooms.
- -	-	- -	1	One, 6 men	1	1	–	One, 30 beds	One, 8 beds	1	One, 4 men	Two in quarter-guard; 3 condemned.	392	Including 16 non-commissioned officers' rooms, and excluding enclosed east verandas, which give space for 128 men at 90 feet each.
Verandas of canteen used.	–	One for four men, 600 yards from barracks.	1	One, 24 men	A Barrack-room used.	Barrack veranda rooms used.	–	One, 130 beds	One, 27 beds	3	One, 4 men	Four in quarter-guard.	*669	* Including 24 non-commissioned officers' rooms, and excluding enclosed east verandas, which give space for 192 men at 90 feet each.
1	–	1	Barrack - room used.	One, 4 men	- ditto - -	Staff Serjeants' quarters used.	–	One, 32 beds	- -	- -	- -	- -	109	
- -	–	1	- - -	One, 7 men	- - -	- - -	–	One, 44 beds (Residency hospital).	- -	- -	One, 3 men (Residency hospital).	12	147	

APPENDIX I.—BARRACK DISTRIBUTION RETURN—*continued.*

DIVISION OF THE ARMY.	STATION.	LINES.	CORPS.	Description of Barrack Dormitory Accommodation.	Number of Single Men for whom there is Accommodation.	Staff Serjeants' Quarters. Number and Class.	Staff Serjeants' Quarters. Description.	Family Quarters. No.	Family Quarters. Description.	Library or Reading Room.	Gymnasium.	Recreation Room.	Theatre.	Workshops.
MHOW DIVISION—*continued.*	Nusseerabad	Artillery	F. Battery, 14th Brigade, R. A.	1, permanent	112	1 A. 2 B.	Permanent	8	Permanent	With school-room.				
		Infantry	2nd Battalion, 1st Regiment, nine Companies, with Head Quarters.	5, condemned 2, ditto 16, permanent 1, temporary (in cavalry lines).	250 88 320 100 } 758	5 A.	ditto	80	ditto	In an old barrack.				N. Cavalry quarter-guard used.
	Indore	Infantry	95th Regiment, one Company.	1, permanent	80					Part of barracks.				
	Ajmere	Infantry	2nd Battalion, 1st Regiment, one Company.	Gun-shed	54									
NORTHERN DIVISION.	Ahmedabad	Artillery, Right Flank Artillery, two Flank	D. Battery, 14th Brigade, R. A., and B. Battery, 18th Brigade, R. A.	Head Quarters, 14th Brigade. 2, semi-permanent 1, permanent (new) 1, semi-permanent 1, permanent	122 20 61 20 } 223	3 B. 1 B.	Temporary ditto	18 12	Permanent ditto					In old barrack.
		Brigade				1 A.	Permanent						Temporary, not used.	Gun-shed and stables used.
	Deesa	Artillery	E. Battery, 14th Brigade, R. A.	3, permanent	114	2 B.	ditto	13	Permanent					1
		Infantry	49th Regiment, Head Quarters, and nine Companies.	1, permanent for band 8, permanent for 47 3, ditto for 53 3, temporary	17 376 159 75 } 627	4 A.	ditto	94	ditto	1, with school room.	One, used as workshop.			Gymnasium used.
	Aboo	Sanitarium	Sanitarium, and one Company, 49th.	16, permanent	160	2 A. 1 B.	ditto	24	ditto	1, with coffee-room.				
	Baroda	Artillery	Division, D. Battery, 14th Brigade.	2, condemned	88	2 B.	ditto	10	ditto					
SIND DIVISION	Kurachee	Artillery	Head Quarters, 18th Brigade; A. Battery, 18th Brigade, R. A.	3, upper storied (only upper story occupied.)	108	2 A. 5 B.	ditto	15	ditto	In barrack, lower story.				
		Infantry	33rd Regiment	10, single storied	710	3 A. 1 B.	ditto	80	ditto			1		1
		Depôt	Depôt	9, ditto	620	2 A.	ditto	90	ditto					
	Ghizree	Sanitarium	Sanitarium	2, ditto	114									
	Hydrabad	Infantry	G. Battery, 14th Brigade, R. A.; 1st Battalion 2nd Foot, 3rd Company.	12, permanent	550	2 B.	ditto	90	Permanent					
BELGAUM BRIGADE.	Belgaum	Artillery, Fort Artillery, Camp	5th Battery, 21st Brigade, R. A. C. Battery, 18th Brigade, R. A.	2, permanent 2, ditto	70 1, 54 1, 50 } 104	1 B. 4 A.	ditto ditto	9 16	ditto ditto	With Serjeants' mess.				Used as harness-room.
		Infantry	26th Regiment	8, permanent at 50 2, ditto at 54 2, semi-permanent	400 108 84 } 592	3 A.	ditto	84	ditto	Serjeants' mess used.				1
	Kolapoor	Artillery	Unoccupied	2, ditto	72	2 B.	Temporary							
	Rairee	Sanitarium	Detail 26th Foot	1, permanent	36									
ADEN BRIGADE	Aden	Artillery Camp	Head Quarters, and seven Companies one Battalion 2nd Regiment; 1st Battery 21st and 4th Battery 21st Brigade, R. A.	2, ditto	52	2 B.	Permanent	16	Permanent	With Serjeants' mess.				
		Infantry, Camp		2, upper storied (both occupied). 1 old R. A. hospital (occupied by band).	128	3 A. 1 B.	ditto	36	ditto	1				
		Infantry, Isthmus		2, ditto (both occupied)	128			52	ditto	Part of Serjeants' mess.				
		Artillery, Steamer Point.		1, ditto (both occupied)	38									
		Infantry, ditto		2, ditto (both occupied)	100			24	Permanent	Part of quarter-guard.				

Appendix I.—Barrack Distribution Return—*continued.*

tle-alleys.	Fives Court.	Plunge Baths.	Canteens.	Guard Rooms.	School Rooms.	Serjeants' Mess.	Officers' Quarters.	Hospital.	Female Hospital.	Quarters for Hospital Serjeant, Steward, Apothecary, Assistant Apothecary, &c.	Hospital Guard Room.	Cells.	Present Strength of Married and Single Rank and File, including Sick in Hospital, and Men on Guard Duty.	REMARKS.
1	1	1	1	One, 7 men	1	1	–	One, 12 beds	– –	2	– –	– –	122	
2	–	1	N. I. hospital used	One, 16 men	N. Cavalry hospital used.	One of the old temporary barracks.	–	One, 63 beds in barracks, old cavalry lines.	One, 6 beds (canteen).	1	One, 4 men (barrack veranda Cavalry lines).	– –	623	
–	–	– –	In barrack veranda	– –	Two barrack veranda-rooms.	– –	–	One, 15 beds	– –	Apothecary accommodated in hospital.	– –	– –	72	Including eight non-commissioned officers' rooms, and excluding east verandas, which gives space for 32 men at 90 feet.
–	–	– –	One, part of gun-shed.	– –	– – –	– – –	–	– –	– –	– –	– –	– –	56	
–	–	– –	– – –	– –	– – –	Staff Serjeants' quarters used.	–	– –	– –	– –	– –	– –	248	
1	–	Two temporary.	One, and store-room.	One, 11 men	One, orderly-room under same roof.	– – –	*5	Under same roof: Two wards, 25 beds.	One ward, 7 beds.	1	– –	6	– – –	* Occupied by one Assistant Surgeon, one Bandmaster, one Subaltern, one Apothecary, one Staff Surgeon.
1	1	1	1	One, 7 men	– – –	– – –	–	One, 14 beds	One, 5 beds, part of hospital.	– –	– –	– –	119	Cubic space insufficient.
–	1	Two for soldiers' garden.	1	One, 15 men	One, with library and coffee-room.	One, with orderly-room.	–	One, 108 beds	One, 10 beds	4	One, 7 men	– –	711	The cubic space of eight of the barracks insufficient.
– –	–	– –	A barrack used –	One, 7 men	– – –	– – –	2	Two of the barracks used.	– –	Live in barracks.	– –	2	73	Including 16 non-commissioned officers' rooms.
– –	–	– –	One, with coffee-shop.	One, 8 men	A barrack used –	– – –	–	One, 80 beds	One, 6 beds	1	– –	2	10	
1	1	1	1	One, 5 men	In barrack, lower story.	In barrack, lower story.	–	One, 16 beds	One, 4 beds	2	– –	2	119	Cubic space insufficient.
1	1	1	1	One, 18 men	– – –	1	–	One, 74 beds	One, 12 beds	3	One, 4 men	6	813	
1	–	– –	1	One, 15 men	– – –	1	–	One, 78 beds	One, 8 beds	– –	– –	4	not known.	
1	–	– –	– – –	– –	– – –	– – –	6	One, 57 beds (one of the two barracks).	– –	1	– –	– –	10	
– –	1	– –	– – –	One, 14 men	– – –	– – –	–	One, 86 beds	One, 6 beds	– –	– –	6	Artillery, 136 / Infantry, 207 } 353	
1	–	1	One, with quarter-guard.	With canteen	– – –	With library –	–	One, 18 beds	Part of men's hospital.	– –	– –	2	56	Cubic space of one barrack insufficient.
– –	–	– –	1	One, 7 men	One, with Serjeants' mess and orderly-room.	With school-room and orderly-room.	–	One, 26 beds, part of Infantry hospital.	Infectious ward, Infantry hospital.	– –	– –	2	121	Cubic space of smaller barrack insufficient.
One used as dry earth shed.	1	1	– – –	One, 15 men	– – –	Reading – room used.	–	One, 120 beds (including 26 with Artillery).	One, 16 beds	1	One, 7 men	6	725	Cubic space of eight smaller barracks insufficient.
– –	–	– –	1											
– –	–	– –	– – –	One, 7 men	– – –	– – –	2	One, 10 beds	– –	– –	– –	– –	Strength – –	Two officers and 45 men of all ranks.
1	–	– –	1	One, 6 men	1	With library –	–	– –	– –	– –	– –	2		
1	1	– –	1	One, 12 men	One, with Serjeant's mess.	With school-room	–	One, 34 beds	One, 8 beds	3	– –	4		
– –	–	– –	1	One, 4 men	– – –	1	–	One, 10 beds	– –	2	– –	4	– – –	Strength of rank and file: Artillery – 122. Infantry – 493.
– –	–	– –	Part of quarter-guard.	One, 4 men	Part of quarter-guard.	– – –	–	– –	– –	– –	– –	4	– – –	The married men's quarters at Aden are smaller than the standard plan.
– –	–	– –	1	One, 7 men	– – –	Part of canteen –	–	– –	– –	– –	– –	4		

APPENDIX II.

LIST of WORKS of CONSTRUCTION, ADDITIONS, and ALTERATIONS, Completed or in Progress during 1866, in BARRACKS and HOSPITALS, in connection with the Accommodation, Health, or Comfort of the TROOPS.

KIRKEE.	
Constructing matron's and assistant matron's quarters, with cook-rooms	Completed.
Constructing 11 temporary urinaries	ditto.
Improving the floors of seven barracks	ditto.
Constructing quarters for an apothecary within the compound of the hospital	In progress.
Making alterations and improvements in the hospital for females	Completed.
Completing additions and alterations to the library	ditto.
Paving with cut stones the floors of the library	In progress.
Making certain improvements to the buildings, as recommended in the Sanitary Commission's Report for 1864, pages 206, 209, and 210, paragraphs 1, 2, 3, 24, 25, 29, 33, 34, 35, 38, 40, 41, and 42	ditto.
Erecting a detached building on the north side of the hospital, to contain a surgery, dispensary, apothecary's and waiting rooms	ditto.
Making additions and alterations to 11 of the barracks	ditto.
Constructing three additional gun and waggon sheds, and three storerooms	ditto.
Providing lamp-hooks and brackets in the barracks	Completed.
Providing and fixing wooden shelves and pegs in the gun-shed storeroom	ditto.
Constructing temporary quarters, guard-room, two solitary cells, and two latrines, for Sappers and Miners	ditto.
Constructing lines for His Excellency the Governor's Body Guard	In progress.

POONA.	
Improving the ventilation of the hospital serjeant's quarters of the General Depôt	Completed.
Constructing a cut-stone range in the kitchen of the General Depôt Hospital, with iron bars in the front and rear	ditto.
Constructing family quarters, with subsidiary buildings, for the Sappers	ditto.
Constructing 14 temporary barracks	In progress.
Adding a room to the hospital serjeant's quarters, General Depôt	Completed.
Erecting three temporary sheds for the accommodation of second-class servants attached to the General Depôt Hospital	ditto.
Erecting wash-houses for the temporary barracks	ditto.
Adding a veranda on the sides of the ward for females at the Depôt Hospital	In progress.
Constructing 14 urinaries for the use of the barracks in General Depôt	Completed.
Constructing two temporary latrines in the General Depôt lines	ditto.
Providing ventilator roof to the three cook-rooms in the Depôt lines	ditto.
Making additions to the Cavalry Hospital	ditto.
Making certain alterations to the hospital occupied by the 22nd Regiment, N.I.	ditto.
Constructing temporary quarters for hospital assistant and servants of Her Majesty's 22nd Regiment, N.I.	In progress.
Making certain additions to the building now used as a storeroom of the 22nd Regiment, N.I.	Completed.

POONA—*continued.*	
Constructing sheds for carts at the hospitals at Ghorepooree, Right Flank, Wanowree, and the General Depôt, and at Kirkee	Completed.
Adapting the latrines of all barracks at Ghorepooree, Wanowree, and Kirkee, to dry-earth conservancy	In progress.

WANOWREE.	
Providing sunshades to the doors and windows of the barracks	Completed.
Completing the flooring on the upper story of the Artillery Barracks	ditto.
Constructing separate watershed for the Artillery Hospital	ditto.
Improving the ventilation of the privies of wash-houses in the Infantry Hospital	ditto.
Putting two iron-barred windows and shutters in each of the gunshed storerooms	ditto.
Constructing two barracks, family quarters, and subsidiary buildings	ditto.
Constructing family quarters for nine families	ditto.
Making certain alterations to the new ranges of patcherries	ditto.
Erecting a recreation-room	In progress.
Providing sunshades to the doors and windows of the barracks	Completed.
Providing for temporary patcherries with outhouses	
Constructing a veranda on the east side of the Infantry Hospital	Completed.
Altering and improving the public military buildings (*vide* pages 194 and 195, paragraphs 31, 32, 33, 40, 42, 43, 44, 46, 47, 48, 49, 51, 52, 53, and 54 of Sanitary Commission's Report for 1864	ditto.
Constructing and fitting up arm-racks and shelves, &c., in the temporary barracks	ditto.
Improving the ward for females in the Right Flank Hospital	In progress.
Enclosing a portion of the veranda of the infantry quarter guard-room	Completed
Constructing four urinaries for two new upper-roomed barracks	ditto.
Making iron eave gutters to nine family quarters	ditto.
Erecting temporary ablution-room at the cells	ditto.
Laying plank floor for lock-up and cells of the quarter guard	ditto.

GHOREPOOREE.	
Planking the roof, and fitting arm-racks in the armourer's shop	Completed.
Constructing quarter guard and defaulters' room	Quarter guard completed.
Making additions and alterations to the hospital	Completed.
Paving with stone the floors of twelve old barracks	ditto.
Improving the drainage of the barracks	ditto.
Improving the married men's quarters and subsidiary buildings	ditto.
Improving the drainage of the hospital and its subsidiary buildings	Nearly completed.
Paving with stone the floors, and providing teak wood shelves, in the surgery lately erected on the south side of the hospital	Completed.

APPENDIX II.

LIST of WORKS of CONSTRUCTION, ADDITIONS, and ALTERATIONS, Completed or in Progress during 1866, in BARRACKS and HOSPITALS, in connection with the Accommodation, Health, or Comfort of the TROOPS.

KIRKEE.	
Constructing matron's and assistant matron's quarters, with cook-rooms	Completed.
Constructing 11 temporary urinaries	ditto.
Improving the floors of seven barracks	ditto.
Constructing quarters for an apothecary within the compound of the hospital	In progress.
Making alterations and improvements in the hospital for females	Completed.
Completing additions and alterations to the library	ditto.
Paving with cut stones the floors of the library	In progress.
Making certain improvements to the buildings, as recommended in the Sanitary Commission's Report for 1864, pages 206, 209, and 210, paragraphs 1, 2, 3, 24, 25, 29, 33, 34, 35, 38, 40, 41, and 42	ditto.
Erecting a detached building on the north side of the hospital, to contain a surgery, dispensary, apothecary's and waiting rooms	ditto.
Making additions and alterations to 11 of the barracks	ditto.
Constructing three additional gun and waggon sheds, and three storerooms	ditto.
Providing lamp-hooks and brackets in the barracks	Completed.
Providing and fixing wooden shelves and pegs in the gun-shed storeroom	ditto.
Constructing temporary quarters, guard-room, two solitary cells, and two latrines, for Sappers and Miners	ditto.
Constructing lines for His Excellency the Governor's Body Guard	In progress.
POONA.	
Improving the ventilation of the hospital serjeant's quarters of the General Depôt	Completed.
Constructing a cut-stone range in the kitchen of the General Depôt Hospital, with iron bars in the front and rear	ditto.
Constructing family quarters, with subsidiary buildings, for the Sappers	ditto.
Constructing 14 temporary barracks	In progress.
Adding a room to the hospital serjeant's quarters, General Depôt	Completed.
Erecting three temporary sheds for the accommodation of second-class servants attached to the General Depôt Hospital	ditto.
Erecting wash-houses for the temporary barracks	ditto.
Adding a veranda on the sides of the ward for females at the Depôt Hospital	In progress.
Constructing 14 urinaries for the use of the barracks in General Depôt	Completed.
Constructing two temporary latrines in the General Depôt lines	ditto.
Providing ventilator roof to the three cook-rooms in the Depôt lines	ditto.
Making additions to the Cavalry Hospital	ditto.
Making certain alterations to the hospital occupied by the 22nd Regiment, N.I.	ditto.
Constructing temporary quarters for hospital assistant and servants of Her Majesty's 22nd Regiment, N.I.	In progress.
Making certain additions to the building now used as a storeroom of the 22nd Regiment, N.I.	Completed.

POONA—*continued.*	
Constructing sheds for carts at the hospitals at Ghorepooree, Right Flank, Wanowree, and the General Depôt, and at Kirkee	Completed.
Adapting the latrines of all barracks at Ghorepooree, Wanowree, and Kirkee, to dry-earth conservancy	In progress.
WANOWREE.	
Providing sunshades to the doors and windows of the barracks	Completed.
Completing the flooring on the upper story of the Artillery Barracks	ditto.
Constructing separate watershed for the Artillery Hospital	ditto.
Improving the ventilation of the privies of wash-houses in the Infantry Hospital	ditto.
Putting two iron-barred windows and shutters in each of the gunshed storerooms	ditto.
Constructing two barracks, family quarters, and subsidiary buildings	ditto.
Constructing family quarters for nine families	ditto.
Making certain alterations to the new ranges of patcherries	ditto.
Erecting a recreation-room	In progress.
Providing sunshades to the doors and windows of the barracks	Completed.
Providing for temporary patcherries with outhouses	1
Constructing a veranda on the east side of the Infantry Hospital	Completed.
Altering and improving the public military buildings (*vide* pages 194 and 195, paragraphs 31, 32, 33, 40, 42, 43, 44, 46, 47, 48, 49, 51, 52, 53, and 54 of Sanitary Commission's Report for 1864	ditto.
Constructing and fitting up arm-racks and shelves, &c., in the temporary barracks	ditto.
Improving the ward for females in the Right Flank Hospital	In progress.
Enclosing a portion of the veranda of the infantry quarter guard-room	Completed
Constructing four urinaries for two new upper-roomed barracks	ditto.
Making iron eave gutters to nine family quarters	ditto.
Erecting temporary ablution-room at the cells	ditto.
Laying plank floor for lock-up and cells of the quarter guard	ditto.
GHOREPOOREE.	
Planking the roof, and fitting arm-racks in the armourer's shop	Completed.
Constructing quarter guard and defaulters' room	Quarter guard completed.
Making additions and alterations to the hospital	Completed.
Paving with stone the floors of twelve old barracks	ditto.
Improving the drainage of the barracks	ditto.
Improving the married men's quarters and subsidiary buildings	ditto.
Improving the drainage of the hospital and its subsidiary buildings	Nearly completed.
Paving with stone the floors, and providing teak wood shelves, in the surgery lately erected on the south side of the hospital	Completed.

GHOREPOOREE--*continued.*

Constructing and fitting up arm-racks and shelves, &c., in the temporary barracks	Completed.
Improving the hospital and its subsidiary buildings	In progress.
Improving the female hospital	ditto.
Improving the hospital guard-room	ditto.
Supplying iron receptacles to the cook-houses in the family quarters	Completed.
Enclosing three open pendalls for hospital servants at the hospital	ditto.
Putting new ventilators under eaves of the main rooms of the new quarter guard	ditto.
Constructing an experimental cooking-stove	ditto.

POORUNDHUR.

Rebuilding barrack destroyed by fire	Completed.
Constructing apothecary's quarters	ditto.
Constructing apprentices' quarters	ditto.
Constructing cook-rooms to barracks, Nos. 1 and 4	ditto.
Paving and improving ventilation of cook-rooms	ditto.
Constructing latrines to barracks, Nos. 1 and 4	ditto.
Paving with cut-stone out-offices to barracks, Nos. 1 and 4	ditto.
Altering latrines for dry conservancy, and constructing one urinary; removing bath-room from corner of barracks, and providing non-commissioned officers' quarters	In progress.
Constructing iron cowl ventilators	Completed.
Facing window-sills of barracks, Nos. 1 and 4, with stone	ditto.
Constructing bakery	In progress.
Constructing fives-court	ditto.
Constructing skittle-shed	ditto.
Constructing hospital servants' quarters	ditto.
Paving soldiers' library with cut-stone	Completed.
Paving barrack, No. 2, with cut-stone	In progress.
Constructing a latrine to female hospital	ditto.

SATARA.

Constructing lavatories and four latrines to permanent barracks	Completed.
Improving plunge bath	ditto.

Temporary Barracks.

Constructing shed for ambulances	ditto.
Fitting arm-racks and improving ventilation in patcherries	ditto.
Improving skittle alley	ditto.
Placing raised sinks to old cook-houses	ditto.
Altering latrines for dry conservancy	ditto.
Constructing a cook-house	ditto.
Constructing urinal to quarter-guard lavatory	In progress.
Making a veranda addition to arsenal guard room	Completed.
Placing gratings in washhouses	ditto.
Constructing a manure yard	ditto.

SHOLAPOOR.

Artillery.

Constructing a temporary barrack	Completed.
Paving with stone the lavatories in barracks	ditto.
Putting raised sinks in cook-room verandas	ditto.
Making alterations to privies	ditto.
Putting wooden gratings in wash-houses	ditto.
Constructing roof-ventilators to hospital	In progress.
Improving the cook-room in hospital	ditto.
Improving the latrines in hospital	ditto.

Native Infantry and Cavalry.

Constructing latrines	ditto.

AHMEDNUGUR.

Artillery.

Erecting a hospital ward for females	Completed.
Erecting an assistant apothecary's quarters and outhouses	ditto.
Putting up two screen walls in the barracks	ditto.
Making watertight the patcherries	ditto.
Paving the floor of the privy	ditto.
Making double tiled roof to the hospital store-room	ditto.
Making bath-rooms in the temporary patcherries	ditto.
Constructing new barracks	In progress.
Making alterations to the hospital for females	ditto.
Making alterations and additions to one of the temporary barracks, to convert it into a quarter-guard detention room, and cells	ditto.

Cavalry.

Paving twelve barracks	Completed.
Making additions and alterations to the cook-rooms	In progress.
Making drainage arrangement in the barrack floors	Completed.
Erecting seven stables for 500 horses	ditto.
Removing a partition in the present quarter-guard	ditto.
Forming two staff serjeants' quarters in the front row of the patcherry	ditto.
Converting two centre quarters of one of the married men's barracks into a day-room for the women	ditto.
Constructing quarter-guard and cells, &c., with outhouses	In progress.
Constructing hospital guard	
Putting ceiling-cloth into patcherry, which is converted into staff serjeants' quarters	Completed.
Making alterations and additions to the latrines at the foot of the horse lines	ditto.
Paving the cook-rooms of the hospital	ditto.
Putting up pegs and shelves in the saddlers' shop	ditto.
Paving with stone the side rooms for 12 serjeants' quarters	In progress.
Paving the rooms of the workshop	Completed.
Substituting glazed windows for 12 shutters, also providing ceiling-cloth to serjeant major and quartermaster serjeant's quarters	ditto.
Building a small chupper shed for meteorological instruments in the hospital compound	ditto.
Putting ceiling-cloth and saddle-racks into staff serjeants' quarters in the patcherries	ditto.
Paving canteen	In progress.
Paving the floors of the two hospital latrines, and constructing ventilation to the roof of the same	ditto.
Fixing five doors in the five staff serjeants' quarters in Nos. 1 and 4 ranges of the patcherries	ditto.
Making bamboo gratings in the rear doors of the ranges of the patcherries Nos. 2 and 3, now occupied by single men	ditto.

Native Troops.

Constructing 2nd class hospital servants' quarters	Completed.

Cantonment.

Repairing suspension bridge over the Ahmednugur fort ditch	In progress.

ASEERGHUR.

Infantry.

Addition and alteration to the solitary cells	June 1866.
Addition and alteration to the bathroom in new barracks	December 1866.
Constructing new bath-room for Musjid barracks	December 1866.

ASEERGHUR—*Infantry*—continued.	
Altering privy seats according to the new plan for dry-earth conservancy	31 August 1866.
Constructing earth shed for Musjid barracks	30 October 1866.
Making ridge ventilator to the quarter-guard new barracks	Completed.
Constructing cemetery	ditto.
Native Infantry.	
Double tiling the hospital	30th October 1866.
Addition and alteration to the privy for the hospital	15 August 1866.
Cleaning Sepoys' tank	August 1866.
BELGAUM.	
Artillery.	
Constructing stables	Completed.
Constructing two new staff serjeants' quarters	ditto.
Sinking a well for the use of the battery horses in camp	ditto.
Constructing temporary latrines in camp	ditto.
Putting sinks in cook-rooms	ditto.
Making a stone pavement for the wheel of the gun-carriage in the gun sheds	ditto.
Erecting new temporary family quarters	In progress.
Making a drain in the barrack ranges in fort	Completed.
Putting down one of the two large latrines in rear of the eastern barracks, and re-erecting two smaller latrines, &c., in the compound of the garrison battery in fort	ditto.
Constructing three temporary barracks on permanent plinths	ditto.
Constructing two purely temporary barracks	1 completed; 1 nearly completed
Constructing five cook-houses	3 completed; 1 in progress; 1 discontinued.
Constructing five wash-houses	ditto.
Constructing one latrine	Completed.
Constructing urinaries	ditto.
Putting up eaves' gutters	3 barracks completed; 1 in progress.
Erecting urinaries for the barracks and hospitals	Completed.
Infantry.	
Constructing bath-rooms to all existing wash-houses in the fort and camp	ditto.
Putting sinks in the cook-rooms in the fort and camp	ditto.
Erecting temporary dry-earth sheds in the fort and camp	ditto.
Making alterations to the seats of latrines in the fort and camp	ditto.
Carrying out petty (drainage) works in the barrack ranges in the fort and camp	ditto.
Partitioning the pendalls occupied by the 2nd class hospital servants attached to the European Hospital	ditto.
Fitting up one of the detached cells near the quarter-guard, to receive the small quantity of ammunition for the 26th Cameronians	ditto.
Erecting 29 temporary urinaries for the barracks and hospital	21 completed; 8 in progress.
Improving barrack square	In progress.
Erecting nine temporary detached wash-houses	ditto.
Altering the hospital privies	ditto.
Constructing a retail shop at the end of the canteen in camp	Completed.

BELGAUM—*continued.*	
Cantonment.	
Erecting two sheds for carts	In progress
Altering the camp privies for dry conservancy	ditto.
Draining low ground near camp	Completed.
MHOW.	
Artillery.	
Improving artillery cells	Completed.
Placing two iron-barred windows in the artillery guard-room	ditto.
Putting two windows on the west end walls of each temporary barracks	ditto.
Removing partition wall of the west end of the Royal Artillery Hospital, and putting two windows into the western outer walls of both wards	ditto.
Making stone floors and masonry platforms in the wash-sheds of the Royal Artillery	ditto.
Sinking a well for Royal Artillery	ditto.
Constructing a temporary hospital for females of the Royal Artillery	ditto.
Erecting a wall round the graves of the Royal Artillerymen buried at Senawad and Hursoora	ditto.
Partitioning off the south end of three of the temporary barracks used for barrack stores, and fitting up some as a temporary female hospital for the Royal Artillery	ditto.
Piercing, and fitting with honeycomb tiling, two windows in the north wash-shed	ditto.
Building up nine archways, and constructing two common doors and five wooden grated windows in a block of stables, to form a forge for 21st Brigade Royal Artillery	ditto.
Putting in three wooden grated windows, building up three archways, and adding a veranda in front of the block of stables used as a workshop	ditto.
Fixing hooks and punkahs in the artillery barracks	ditto.
Fixing hooks and punkahs in the hospital	ditto.
Fitting up wooden seats to the north privy	ditto.
Fixing ceiling, glazed windows, and ridge ventilators to barracks	In progress.
Erecting temporary cook-houses, lavatory, and latrines for the use of non-commissioned officers and men	ditto.
Building flues over the hearths of cook-room	Completed.
Constructing hospital cart sheds	ditto.
Constructing private ablution rooms, and improving a wash-house	ditto.
Fixing shelves in the medical office	ditto.
Constructing a masonry drain round the well near the Royal Artillery Hospital	ditto.
Removing temporary quarter-guard and gram-room	ditto.
Constructing water cistern and channels for watering tatties at the hospital	ditto.
Repairing well on the east side of the artillery horse lines, and fitting up a moat to the same	In progress.
Constructing chimneys, and making sundry improvements to the cook-houses	Completed.
Erecting verandas in front of the library and reading-room	ditto.
Deepening well, north of artillery lines	ditto.
Fixing two glazed windows in the guard room	ditto.
Erecting a screen in the hospital wash-house	ditto.
Constructing forty married men's quarters	20 completed; 20 in progress.
Filling up pits near the barracks	Completed.
Constructing new doors and windows to the bomb-proof barracks	In progress.
Erecting two urinaries	Completed.

MHOW—*continued.*

Cavalry.

Improving cells	Completed.
Constructing staircases in the veranda of cavalry barracks	ditto.
Constructing a small cistern in the bath-rooms of the dragoons' hospital	ditto.
Constructing out-offices for the serjeants' quarters in the cavalry lines	ditto.
Removing masonry partition at each end of the tiled, male, hospital in the cavalry lines	ditto.
Making new floors in the wash-house of Her Majesty's 4th Inniskilling Dragoons' Hospital	ditto.
Converting the spaces under the staircases of cavalry barracks into troop storerooms	ditto.
Fixing hooks and punkahs in cavalry barracks	ditto.
Fixing hooks and punkahs in the hospital	ditto.
Filling up two large pits west of the cavalry lines	ditto.
Constructing a hospital cart-shed	ditto.
Adding eight bath-rooms, for private ablution, to the lavatories, and adding verandas to the cavalry cook-houses	ditto.
Constructing water cisterns and channels for waste water of tatties	ditto.
Perforating window-shutters of the cavalry detention-room, and supplying screen to the same	ditto.
Altering a latrine in the cavalry lines	ditto.
Raising parade ground in front of the left wing barracks, so as to make the water run off	ditto.
Altering serjeants' and married men's quarters, cavalry lines	In progress.
Constructing wooden covers to cesspools of cook-house and ablution-rooms of cavalry barracks	Completed.
Windows of cavalry barracks and staircases hung by hinges	ditto.
Making ladders to the roofs of double-storied buildings	In progress.
Constructing mangers for sick horses' stables	ditto.

Infantry.

Improving cells	Completed.
Constructing staircases in the verandas	ditto.
Constructing out-offices for the serjeants' quarters	ditto.
Enlarging ventilating holes in the walls of the hospital, and fixing temporary doors in the same	ditto.
Converting the spaces under the staircases into store-rooms	ditto.
Fixing hooks and punkahs in barracks	ditto.
Fixing hooks and punkahs in hospital	ditto.
Making circular air holes in the back walls of the cook-houses	ditto.
Constructing hospital cart shed	ditto.
Alterations and improvements to the ground about the new hospital	ditto.
Constructing culverts over the eastern road	ditto.
Fitting up five sunshades in the female hospital	ditto.
Making steps to the two rear blocks of patcherries	ditto.
Fitting the windows of upper story of new hospital with glazed windows	ditto.
Constructing a road to the new hospital	ditto.
Constructing a double-storied hospital, with its necessary detached buildings	ditto.
Adding 12 private ablution-rooms to lavatories	ditto.
Altering serjeants' and married men's quarters	In progress.
Fitting a pendulum, and hanging the punkahs of infantry hospital with iron rods	ditto.
Dividing hospital steward's bathroom from veranda by a partition wall	Completed.
Renewing the drains, and providing waste-water cistern of wash-houses with lids	ditto.

MHOW—*Infantry*—continued.

Making ladders to the roof of the double-storied buildings	In progress.
Paving the circuit of the well in the soldiers' garden, and making a masonry drain to carry off the spilt water	ditto.
Erecting six urinaries for the three upper-storied barracks	Completed.

Native Infantry.

Erecting a latrine for the hospital	ditto.
Erecting quarter-guard and cells for two Native Infantry regiments	In progress.
Constructing a schoolroom far one regiment	Completed.
Altering the latrines newly erected at the hospital	ditto.
Levelling the ground around one of the hospitals, and covering it with sand	ditto.
Putting a window into staff serjeants' quarters, No. 99, and a door into west side of the same	In progress.
Converting an old barrack into quarters for the warrant and non-commissioned staff	Completed.
Converting windows into half-glazed doors, in bazaar serjeants' quarters	ditto.
Fixing hooks and punkahs in garrison cells and guardroom	ditto.
Altering part of the staff hospital into medical storerooms	In progress.
Building a 15-feet culvert over the end drain, near the commissariat spirit-godown	ditto.
Putting doors and windows to commissariat weighing-shed	ditto.
Converting three arches in the corner of south-west portion of the fort into latrines	ditto.
Piercing a window in provost serjeant's quarters in fort	Completed.

Cantonment.

Improving the drainage on the north-east	ditto.
Constructing a bund across the Gumbeer river	ditto.

INDORE.

European Troops.

Fixing hooks and punkahs in barracks	Completed.
Fixing hooks and punkahs in hospital	ditto.
Constructing two gratings for the bath-rooms	ditto.
Constructing sunshades to the ventilating windows of the hospital	ditto.
Erecting steps on the north end of barracks	ditto.
Putting shelves in the hospital store rooms	ditto.
Drainage and cesspool to the cook-house of the barracks	ditto.
Fixing pullies and boring holes for punkahs in the barracks	ditto.

Native Troops.

Reconstructing the Cavalry escort barracks	ditto.
Reconstructing Sowars' lines	ditto.
Reconstructing the ten Native Infantry barracks	ditto

NEEMUCH.

Artillery.

Adding two additional bays to the quarter-guard and gun-shed	Completed.
Erecting tiled veranda in front of the Artillery quarter-guard	ditto.

Infantry.

Constructing barracks and subsidiary buildings for a wing	In progress.
Constructing a guard-room in the fortified sqare	ditto.

NEEMUCH—*Infantry*—continued.	
Constructing six wash-houses and six urinaries	In progress.
Constructing bath-rooms to be attached to certain buildings	Completed.
Making additions and alterations to staff serjeants' quarters	In progress.
Making additions and alterations to the barracks and patcherries	- ditto.
Making additions and alterations to the solitary cells, wash-houses, &c.	Completed.
Constructing a dry-earth shed for the use of the troops	- ditto.
NUSEERABAD.	
Artillery.	
Making additions and alterations to the artillery serjeants' mess	Completed.
Converting artillery hospital's guard-room into apothecary's quarters	- ditto.
Making additions and alterations to the artillery barracks	- ditto.
Infantry.	
Constructing barracks with subsidiary buildings	In progress.
Constructing a guard-room	- ditto
Constructing a temporary guard-room	Completed.
Constructing a new pattern urinary	- ditto.
Constructing 15 urinaries, and converting bomb-proof No. 32 into a latrine	- ditto.
Constructing four skittle-sheds	- ditto.
Constructing bath-rooms to be attached to certain buildings	- ditto.
Making additions and alterations to the staff serjeants' quarters	In progress.
Making additions and alterations to the barracks and patcherrries	Completed.
Making additions and alterations to the hospital	- ditto.
Supplying fittings to the armourer's shop	- ditto.
Marking out manure yards, and constructing dry-earth sheds	- ditto.
Making additions and alterations to the seats of privy	- ditto.
Supplying wooden gratings and pegs to the plunge-bath	- ditto.
Constructing dressers for basins, and supplying wooden gratings for the wash-house	- ditto.
Making additions and alterations to various buildings	- ditto.
Cantonment.	
Supplying iron vessels to the several cook-rooms	- ditto.
AJMERE.	
Infantry.	
Constructing four skittle sheds	Completed.
Making additions and alterations to various buildings	- ditto.
Making additions and alterations to the officers' quarters	- ditto.
TARAGHUR.	
Infantry.	
Constructing a skittle-shed	Completed.
Making additions and alterations to the public buildings	- ditto.
Constructing a urinary, and altering the latrines	- ditto.
Providing quarters for medical officer	- ditto.
TANNA.	
Native Troops.	
Constructing temporary privy accommodation for a wing	Completed 22 August 1866.
Making alterations to the privy of the hospital	22 Sept. 1866.
BULSAR.	
Constructing four chupper sheds, with out-houses, for tents used as temporary sanitarium, at Teethul	Completed.
Constructing a skittle-alley at Teethul	- ditto.
Making fireplaces in the cook-room attached to the new chupper shed, constructed for families at Teethul	- ditto.
SURAT.	
Native Infantry.	
Constructing solitary cells	Completed.
Constructing two masonry sentry-boxes, and adding a veranda to the regimental quarter-guard	- ditto.
Removing the old, and building new quarters for two sweepers and a leechman, and building a new privy for the Infantry Hospital	- ditto.
Altering a portion of the Dumas Road, close by the new infantry lines	- ditto.
Converting a portion of the old bullock-shed into quarters for two fire-engine lascars, a bazaar peon, and a bazaar chowdry	- ditto.
Erecting three rooms as quarters for certain servants, attached to the Native Infantry Hospital	- ditto.
Raising partition walls in the new hospital cook-room	- ditto.
BROACH.	
Native Infantry.	
Constructing two movable sentry-boxes	Completed.
BARODA.	
Artillery.	
Providing new dungree-cloth ceiling to barracks and hospitals	Completed.
Adding a veranda to the rear of the female hospital	- ditto.
Providing fireplaces with chimney, to the cook-houses of the male and female hospitals	- ditto.
Providing new dungree-cloth ceiling to the permanent patcherry for four families	- ditto.
Providing new dungree-cloth ceiling to the guard-room	- ditto.
Raising the partition wall between each quarter of the permanent patcherry	- ditto.
Adding a third revolving, covered ventilator to the quarter-guard	- ditto.
Making covered passage from female hospital to privy	- ditto.
Altering the privies of the male and female hospital	- ditto.
Altering the artillery latrine	- ditto.
Putting up two additional doors in the buildings, occupied by the detachment	- ditto.
Native Infantry.	
Providing new dungree-cloth ceiling to the hospital	- ditto.
Building walls between the pillars of the pendall, occupied by the 2nd class hospital servants	- ditto.

AHMEDABAD.

Artillery.

Erecting two temporary barracks	Completed.
Erecting three permanent stables	ditto.
Altering the hospital latrine	ditto.
Constructing cook-houses and latrines	ditto.
Constructing wash-houses	In progress.
Adding a veranda to the hospital	Completed.
Erecting a shed for the sick-carts in the hospital compound	ditto.
Making an addition to the serjeants' quarters of the two new temporary barracks	ditto.
Altering the latrines of the cells	ditto.
Ditto ditto of the old family quarters	ditto.
Ditto ditto quarter-guard	ditto.
Ditto ditto school-house	ditto.
Making alterations to the bath-rooms and latrines of the hospital	ditto.
Paving with stone the hospital	ditto.
Providing ridge and ceiling ventilation to the old family quarters	ditto.
Providing iron hanging shelves in the steward's store-room at the hospital	(Not stated.)
Adding a ward for females to the hospital	In progress.
Making ridge ventilation, and providing glazed doors and windows to the cell guard-room	Completed.
Pulling down the old temporary theatre	In progress.
Ditto ditto harness-rooms	ditto.
Ditto coffee-shops, formerly staff serjeants' quarters	ditto.
Ditto staff serjeants' quarters tiled roof	ditto.
Ditto outhouses to ditto	ditto.
Ditto five old temporary cook-houses	ditto.
Ditto five old latrines	ditto.
Ditto one old washhouse	ditto.
Adding enclosed verandas to three sides of the canteen	dltto.
Providing ridge ventilation and smoke-shafts to the cook-houses of the old family quarters	ditto.
Flooring with bricks the rear veranda of the old family quarters	Completed.
Erecting a double fives-court, one side capable of being used as a racket court	In progress.
Converting half the old temporary gun-shed into a harness-room, as a temporary arrangement	Completed.
Enclosing the east veranda of the hospital serjeant's quarters	ditto.
Paving with stone the two new temporary barracks	In progress.
Erecting a shoeing-shed, with double forge	ditto.
Constructing a bowling-alley	ditto.
Paving with stone the three "Persian" barracks	ditto.
Erecting two blocks of family quarters	Completed.
Providing ceiling-mats to the veranda roofs of the hospital	ditto.
Double tiling the veranda roofs of the hospital serjeant's quarters	ditto.
Altering the hospital latrines	ditto.
Erecting a temporary grain-house	ditto.
Erecting two temporary urinal sheds	In progress.
Erecting a temporary urinal shed in the hospital compound	ditto.
Erecting a shed for dry earth	Completed.
Deepening the nulla which forms the outlet from the tank near the General's compound	ditto.

Native Infantry.

Altering the right flank hospital	Completed.
Altering the left flank hospital	ditto.
Altering the staff and detail hospital	ditto.
Erecting latrines	In progress.
Erecting a cook-room for the right flank hospital	ditto.
Making additions and alterations to the porch used as a guard-room for right flank	Completed.

DEESA.

Artillery.

Constructing harness-rooms and a workshop	Completed.
Constructing straw-house for the hospital	ditto.
Constructing a dead-house for the hospital	ditto.
Constructing a cook-house for the use of the apothecary	ditto.
Constructing a privy for ditto	ditto.
Flooring with rough cut stone the barracks	ditto.
Making alterations and improvements in the patcherries	ditto.
Converting the window in the outer wall of the hospital into a door	ditto.
Raising roof of hospital	ditto.
Placing ceiling-cloth in the hospital	ditto.
Placing a ventilator on the roof of the quarter-guard	ditto.
Making additions and alterations to the latrines for married men	ditto.
Removing the present mud floor, and making a new permanent floor of stone pavement in the patcherries	ditto.
Placing a ridge-ventilator on each of the three barracks	ditto.
Placing glass windows in lieu of wooden bars to the windows in the barracks	ditto.
Adding a new veranda to the library and school-house	ditto.
Making alterations and additions to serjeants' quarters	In progress.
Providing continuous ridge ventilator for the horse-stables	Completed.
Making additions and alterations to the latrines in the hospital	ditto.

Infantry.

Constructing temporary barracks	In progress.
Providing additional hospital accommodation to suffice for a full European regiment	Completed.
Constructing permanent family quarters	In progress.
Providing quarters for the provost serjeant	Completed.
Constructing a veranda in front of the female ward	ditto.
Constructing a permanent urinary	ditto.
Demolishing urinaries in the lines	ditto.
Adding a thatched veranda to the hospital	ditto.
Making additions and alterations to 16 latrines for married men	ditto.
Making additions and alterations to the latrines for single men	ditto.
Making additions and alterations to the latrines in rear of the school-house	ditto.
Converting a gymnasium into married men's quarters	ditto.
Making additions and alterations to the quarter-guard	ditto.
Reconstructing the fireplaces in the centre of the cook-house	ditto.
Fixing iron ventilators, ceiling-cloth, &c.	ditto.
Making alterations and improvements in the patcherries	ditto.
Making additions and alterations to the latrines for males in the hospital	ditto.
Constructing barrack-master's quarters, to contain office	In progress.
Making additions and alterations to barrack-store	Completed.

Native Infantry and Cavalry.

Making additions and alterations to the latrines of the Native Cavalry and Infantry Hospitals	ditto.
Constructing solitary cells for the Native Cavalry	ditto.
Erecting sentry-boxes in the lines of Native Infantry regiment	ditto.

MOUNT ABOO.

Constructing barracks	In progress.
Constructing barrack store	Completed.
Purchasing a bungalow for the medical officer	ditto.
Constructing footpaths in the stauding camp	ditto.
Sinking two wells for the standing camp	ditto.
Erecting chuppur huts for the accommodation of the European troops in the standing camp	ditto.
Erecting chuppered huts for hospital servants	ditto.
Making mat frame partition walls for married men's quarters	ditto.
Erecting temporary screens in three barracks	ditto.
Draining the lines of the Sanitarium barracks, and destroying rank vegetation	ditto.
Repairing with cut stone the lavatory floors of the Sanitarium	In progress.
Supplying wooden gratings for the ablution-rooms of the Sanitarium	Completed.

BHOOJ.

Native Infantry.

Additions and alterations to the hospital latrine	Completed.
Constructing two latrines for men, and one for women	In progress.

UPPER SIND.

Native Infantry.

New lines at the outposts	In progress.
Additional work for the lines at Soee	ditto.
Additions to the pendalls at the outpost	ditto.

KURACHEE.

Artillery.

Quarters for four staff serjeants	Completed.
Quarters for an assistant apothecary, with two apprentices	ditto.
Skittle and bowling alley	ditto.
Removing and clearing bazaar lines, and paying compensation to householders	ditto.
Providing pucka teak trellis work for the veranda of hospital steward's quarters	ditto.
Harness-rooms, with workshops	In progress.
Partitioning off a portion of No. 1 barrack, Somerset lines	Completed.
Additions and alterations, &c. to the barracks	In progress.
Constructing sheds for sick carts for the troops	Completed.

Infantry.

Erecting an iron frame, temporary, building in the Napier lines	ditto.
Putting trellis work to the veranda in front of the Infant and Industrial Schools and the quarters of the schoolmaster	ditto.
Dividing the doors in one of the barrack-rooms in the Napier lines into two equal parts, capable of being closed or opened independently	ditto.
Dividing the doors in nine barrack rooms in the Napier lines into two equal parts, capable of being closed and opened independently	In progress.
Putting eave ventilators in the centre ward, ground floor, of the hospital in the Napier lines	Completed.
Putting trellis work to the veranda of the building occupied by serjeants' mess	ditto.
Skittle shed, with two bowling alleys	In progress.
Providing shelves in the married soldiers' barracks, Napier lines	ditto.
Additions and and alterations to the barracks	ditto.

KURACHEE—*continued.*

Depôt.

Making certain additions and alterations to the outbuildings connected with barracks, hospitals, patcherries, &c., in the Fitzclarence lines	Completed.
Renewing the roofs of the barracks, &c.	In progress.
Erecting punkah partitions in the hospital	Completed.
Adding ventilators to the canteen and school-room	ditto.
Alterations to the non-commissioned officers' rooms	In progress.
Fitting up a building as a library and reading-room	Completed.
Erecting pucka partitions in the schoolroom	ditto.
Additions and alteration, &c., to the barracks	In progress.

Native Infantry.

Constructing a privy for natives	Completed.

HYDERABAD.

Artillery.

Constructing sheds for the troops	Completed.
Alterations to the barracks and buildings	In progress.
Harness-rooms, with workshops	ditto.
Skittle-sheds, with bowling-alley	ditto.
Constructing latrines in the fort	Completed.

European Infantry.

Skittle-sheds, with two bowling-alleys	In progress.
Alterations to the barracks and buildings	ditto.
Erecting a guard-room in the fort	Completed.

Native Infantry.

Erecting new latrines in No. 1 Native Infantry lines	ditto.

GHIZREE.

Constructing a dead-house	Completed.
Alterations and additions to the pendalls	ditto.
Providing floor ventilation in the barracks	ditto.

COLABA.

Infantry.

Making certain additions and alterations to the solitary cells	Completed.
Providing glazed in lieu of venetian shutters to No. 104 bungalow	ditto.
Erecting two skittle-alleys for the barracks	ditto.
Erecting a sick cart shed in the hospital compound	ditto.
Erecting huts for cooks and other public followers of Her Majesty's 4th King's Own Royal Regiment	ditto.
Making certain improvements to the armourer's shop	ditto.
Providing 14 iron water tanks for the European infantry barracks	In progress.
Substituting glazed for venetian shutters on the monsoon side of all the officers' bungalows	ditto.
Providing wrought-iron pipes to the bath-room near No. 79 barrack	ditto.
Making certain improvements to No. 104 bungalow	Completed.
Erecting a porch in front of bungalow No. 102	ditto.
Constructing raised platforms in the rooms now used as urinaries attached to barracks	In progress.
Enclosing the ground in rear of the solitary cells, Colaba, and erecting a shed thereon	ditto.
Constructing 12 temporary urinal sheds for barracks	Completed.

Colaba—*Infantry*—continued.	
Providing cloth-ceiling to the roof, and wire netting to the ventilators, of the infantry hospital	Completed.
Making certain improvements to the quarter-guard of the infantry barracks	ditto.
Providing ceiling and ridge ventilation to the school-room	ditto.
Constructing two temporary barrack serjeants' mess and reading-rooms	ditto.
Laying down Vehar water pipe to the infantry barracks and officers' bungalows	ditto.
Providing four raised sinks in the cook-rooms of the regimental barracks	ditto.
Providing wooden steps to the bath-room in No. 6 bungalow	ditto.
Providing wooden gratings to all the bath-rooms attached to the infantry barracks	ditto.
Erecting two bath-rooms for the quarter-guard and cells	ditto.
Constructing one urinal shed for the serjeants' mess	(Not stated.)

Colaba Sanitarium.	
Widening the gate of No. 117 bungalow	Completed.
Providing sun-shades to the Sanitarium Hospital	ditto.
Providing railing to the south and west sides of Depôt barracks	ditto.
Filling up a hollow, south of the serjeant major's quarters at the Sanitarium	ditto.
Providing extra Vehar water pipe to the female ward, Sanitarium Hospital	ditto.
Making certain improvements to the privies of the Sanitarium Hospital	ditto.
Providing trellis-work to the veranda of the hospital serjeant's quarters, Sanitarium Hospital	ditto.
Making certain additions and alterations to No. 111 bungalow, occupied by Dr. Corbett	ditto.
Making certain additions and alterations to the bungalow occupied by Captain Smith	ditto.
Laying on Vehar water to the soldiers' garden attached to the Sanitarium barrack	ditto.
Constructing two urinal sheds for the Sanitarium barrack	In progress.
Making certain improvements to the single men's barrack	Completed.
Providing cloth-ceiling and paved floor for the smaller barracks	ditto.
Providing roof ventilators, cloth-ceiling, &c., to the guardroom	ditto.
Providing smoke shafts to the cookroom	ditto.
Providing roof ventilaton, cloth-ceiling, &c., to the Sanitarium Hospital	ditto.
Converting the guard-room into hospital serjeants' quarters	ditto.
Converting three rooms of the 2nd class servants' quarters into a guard-room	ditto.
Laying down Vehar water pipe to the Sanitarium	ditto.

Bombay.	
Native Infantry.	
Adding a bath-room and privy to the Brigadier General's bungalow on the esplanade	Completed.
Erecting a stand for the rain-guage in front of the hospital	ditto.
Paving with finely-dressed stone the floor of the privy	ditto.
Making certain additions and alterations to the mess quarters	ditto.
Making additions and alterations to the lines on the esplanade	In progress.

Aden.	
European Infantry and Artillery.	
Removing and rebuilding cooking-shed for the use of the Royal Artillery	Completed.
Substituting terraced roofs to Nos. 1 and 2 wash-houses of barracks, Front Bay	ditto.
Subsidiary buildings at Isthmus	ditto.
Fixing cross-bars, pulleys, and uprights in veranda, No. 2 barracks, Front Bay	ditto.
Removing and rebuilding privy, M. N. G. Hospital	ditto.
Four upper-storied barrracks in Front Bay	ditto.
Three upper-storied barracks at Steamer Point	ditto.
Additional upper-storied barracks at Steamer Point	In progress.
Family quarters and out-houses at Isthmus	ditto.
Two urinaries, 800 feet covered passage, and ordinary bath-rooms, Front Bay	Urinaries completed; work in progress.
Armourer's shop, Front Bay	In progress.
Substituting terraced roofs to buildings	ditto.
Additional accommodation for hospital at the Isthmus camp and Artillery hospitals	The Isthmus one in progress; the others completed.
Additional skittle-alleys to barracks in Front Bay and Steamer Point	In progress.
Paving lower and upper wards for European Hospital	Completed.
Increasing size of solitary cells, Front Bay	(Not stated.)
Upper-storied quarter-guard in Front Bay	In progress.
Lines for Golundauze at Steamer Point	ditto.
Altering seats of privies in camp and Steamer Point, to carry out the new dry conservancy system	ditto.
Raised sinks to cook-houses	ditto.
Veranda to Golundauze lines at Steamer Point	ditto.
Roof to cook-house at Perim	Completed.
Drainage, bath-room floor, Isthmus	ditto.
Deepening and increasing size of slopes of drains behind patcherries, Steamer Point	In progress.
Native Infantry Lines.	
Temporary latrines in hospital compound	Completed.
Altering seats of privies	ditto.
Privy for detachment at Isthmus	ditto.
Adding six open verandas to pendalls, solitary cells, for Native infantry	In progress.
Roofing privy for detachment, Isthmus	ditto.
Altering seats, Native Infantry Hospital, in accordance with dry conservancy system	ditto.

EXTRACT from CIRCULAR, No. 19, of 5th March 1866.

PUBLIC WORKS.

PRINCIPLES of Construction of HOSPITALS for EUROPEAN and NATIVE TROOPS, by Lieutenant-Colonel *Crommelin*, R. E.

HOSPITALS FOR EUROPEAN TROOPS.

Regimental and general hospitals.

Proposal No. 1.—That, as a rule, separate hospitals must continue to be provided for every regiment or detachment; and that general hospitals should in special cases only be constructed for the troops serving in India.

Conclusion of the Government of India.—The Government of India considers that, as a rule, separate hospitals must continue to be provided for every regiment or detachment, and that a general hospital is not, unless under exceptional circumstances, required in time of peace.

Extent of accommodation.

Proposal No. 2.—That hospital accommodation be provided to the following extent for the units of each arm of the service:—

	Men.	Women.
Regiment of Infantry - - - - -	*110*	*20*
Regiment of Cavalry - - - - -	62	14
Light Field Battery of Artillery - - -	20	4
Garrison Company of Artillery - - -	10	4

The above number are in the proportion of 12 per cent. of strength when the latter exceed 400 men, and of 12 to 15 per cent. for smaller detachments.

Conclusion of the Government of Inida.—After a careful examination of the hospital returns for the last few years, the Government of India is of opinion that it will suffice to provide hospital accommodation, at the generality of stations, according to the following scale:—

At 10 per cent. on full regulation strength for regiments, and for detachments exceeding 400 in number.

At 12 per cent. for detachments under 400 men.

Morar.
Saugur.
Delhi.
Agra.
Peshawu.

At the stations in the Bengal Presidency noted in the margin, which have proved to be more unhealthy than others, the above rates may be thus increased; viz., 12 per cent. on full regulation strength for regiments and for detachments exceeding 400 in number; 12 to 15 per cent. on strength for smaller detachments than 400 men.

The increased proportions will also apply to unhealthy stations in the Bombay and Madras Presidencies.

The complement for each arm of the service will be as follows:—

	At unhealthy Stations.	At healthy Stations.
	Men.	Women.
Infantry - - - - - - - -	110	92
Cavalry - - - - - - - -	62	50
Battery of Artillery - - - -	20	18
Garrison Company of Artillery - -	10	10

The extent of accommodation for women is still under consideration with reference to a late order which directs that women shall, in all practicable cases, receive medical treatment in their own quarters; on this point further instructions will be issued.

Number of floors in the plains.

Proposal No. 3.—That all regimental or detachment hospitals, which may hereafter be constructed in the plains of India, shall be doubled-storied buildings, in which the whole of

of the wards for the sick, together with a certain necessary amount of subsidiary accommodation, shall be arranged in the upper floors, and the day-room administrative offices, quarters for medical subordinates, &c., shall be provided in the lower stories; further, that the kitchen, guard-room, dead-house, sheds for ambulance-carts, privy, and lavatory for general use, shall be in out-buildings.

Conclusion of the Government of India.—Looking to the great expense that is involved in the future provision of hospital accommodation throughout India, to the excess of space for auxiliary purposes in the lower floors that will be the consequence of the construction of buildings unnecessarily large, to the fact that the proportion of sick only exceeds seven and and eight per cent. of strength for a brief period during each year, and lastly, to the positive advantage there may be in having accommodation in the lower floor for a small number of certain classes of patients, the Government of India considers that it is not necessary to provide accommodation in the upper floor for more than three-fourths of the total complement of patients, the remaining one-fourth being arranged for in well-raised and well-ventilated lower floors. By such an arrangement the actual necessity of placing patients in the lower floor will rarely occur.

Proposal No. 4.—That at hill stations the same description of hospital be provided, but that, when there is restricted space, accommodation for a portion of the patients may be in the lower floor. **Number of floors at hill stations.**

Conclusion of the Government of India.—The Government of India does not anticipate any difficulty in the proper ventilation of lower floors, and, for the reason given in the preceding conclusion, approves generally of this proposal. A larger portion than one-fourth of the total complement of patients may, however, be provided for in the lower floors, if such an arrangement should prove convenient with reference to existing auxiliary accommodation.

Proposal No. 5.—That buildings of more than two stories are only admissible in localities where a certain amount of accommodation is absolutely required, and where, owing to restriction of space, it cannot be provided without recourse being had to a third, or perhaps a fourth, story. **Limit of number of floor.**

Conclusion of the Government of India.—The Government of India agrees to the proposal.

Proposal No. 6.—That the subdivision of a hospital into a number of small buildings is objectionable, because it tends to unnecessary expense, to the occupation of too great space, and to the overtaxing of the powers of the establishments; and further, that it is not necessary, in military hospitals, which are rarely fully occupied, in which the generality of cases treated are not of a serious character, and in which the whole of the sick have liberal accommodation provided for them in upper floors.

Conclusion of the Government of India.—The Government of India approves of the proposal, and the subdivision of a hospital into a number of very small buildings is objectionable on sanitary, administrative, and financial grounds.

The general arrangement of the approved hospital specimen plans, which will be presently adverted to, will, it is believed, meet generally the views of the Home Commission.

Proposal No. 7.—There can be little or no risk in placing 50 or 60 sick in one building, especially if the building be so designed that it shall not be covered by one continuous roof, but shall be separated into sections, each of which shall have, as nearly as possible, an independent ventilation. **Number of sick under one roof.**

Conclusion of the Government of India.—This proposal is approved of by the Government of India.

Proposal No. 8.—That the number of buildings for each arm of the service should be as follows:—For a regiment of infantry, two buildings for the men, and one building for the women and children. **Number of buildings for each of the units.**

For a regiment of cavalry,* one building for the men, and another for the women and children.

For one or two batteries of artillery, a single building for both men and women; for three or four batteries, two buildings and so on, the rule being that one building shall only serve for two batteries. In the event, however, of its being necessary to keep the sick of each

* If a greater classification of sick is required than can be arranged for in five wards, a second building should be given.

each battery entirely separated from each other, then each battery should have its own separate building.

Conclusion of the Government of India.—The Government of India approves also of this proposal, but considers that a separate hospital should be provided for the women, whenever the number of female patients amounts to ten or upwards.

Component parts of a hospital.

Proposal No. 9.—That the component parts of every military hospital shall consist of—

1. Wards for the sick and convalescents.
2. Ward offices; viz., superintendent's rooms, sculleries, privies and urinaries, bath and ablution rooms.
3. Day-rooms for sick and convalescents.
4. Quarters for medical subordinates.
5. Quarters for hospital serjeants.
6. Quarters for hospital orderlies.
7. Store-rooms.
8. Surgery.
9. Receiving room.
10. Outdoor kitchen.
11. Outdoor lavatory (with shower bath).
12. Outdoor privy.
13. Guard-room.
14. Shed for ambulance carts, hearse, &c.
15. Dead-house.
16. Enclosure wall or railing.

Conclusion of the Government of India.—The Government of India considers that a separate dispensary is unnecessary, and that one room will suffice for a combined surgery and dispensary. The following, however, should be added to the above list :—

1. Houses for native establishment.
2. Laundry.
3. A small detached building for contagious diseases.

Subdivision of wards.

Proposal No. 10.—That the objections to a multiplicity of buildings apply also to a multiplicity of wards ; or, in other words, to the subdivision of the sick amongst a number of small wards; and further, that the classification of diseases and proper subdivision of the sick will be sufficiently met by the following numbers of wards in each description of hospital :—

Infantry hospital,—five large and two small wards for the men, and one large and one or two small wards for the women.

Cavalry hospital,—three large and two small wards for the men, and one large and one small ward for the women.

Artillery (each battery),—two large and one small ward for the men, and one ward for the women.

Conclusion of the Government of India.—The Government of India approves of the general principle involved in the proposal, and considers that the proposed numbers of wards for each description of hospital are satisfactory, with reference to hospitals intended to accommodate the whole of the patients in upper-storied rooms. The number of wards must, however, necessarily be somewhat increased when the lower floors are in part to be occupied by patients. The specimen plans, which accompany this circular, will illustrate the increase.

Wards for infectious diseases, ophthalmia, delirium tremens, insanity.

Proposal No. 11.—That a detached building for infectious diseases does not seem necessary for any hospital, and certainly not for any hospitals smaller than those for a regiment of infantry or cavalry; but if its provision be decided upon, that a single-storied building, well raised, should answer the purpose, and that one such building should suffice for a whole station, instead of separate ones being attached to each hospital.

Conclusion of the Government of India.—After carefully weighing all that has been advanced on this very important point, the Government of India has come to the conclusion that it is not necessary to add to regimental hospitals detached buildings for contagious or other special diseases upon the extensive scale advocated by many. Such a measure would involve the provision of an excessive amount of hospital accommodation generally.

One or two small detached wards, however, in which a few isolated cases may occasionally be accommodated, will no doubt often prove very useful. The Government of India therefore authorises, for each hospital of regiments of cavalry or infantry, the provision of a well-raised single-storied building, to contain two wards, each ward being sufficiently large for two patients.

The wards are to be understood as intended especially for contagious diseases, but, when there is immunity from such diseases, they may be occupied by insanes, prisoners, or men suffering under delirium tremens.

Ophthalmic patients may be accommodated in the hospital proper, in a ward to which a separate lavatory is attached.

For smaller hospitals a detached building for special diseases will not be allowed.

Proposal

Proposal No. 12.—That the following is a suitable distribution of beds in the wards of the several hospitals :— Distribution of beds in the wards.

Infantry Male Hospital.	Beds.
4 Wards of 24 beds each	96
1 ditto 12 ditto	12
2 ditto 2 ditto	4
Total	112

Infantry Female Hospital.	
1 Ward of 18 beds	18
2 ditto 2 ditto each	4
Total	22

Cavalry Male Hospital.	
2 Wards of 24 beds each	48
1 ditto 10 ditto	10
2 ditto 2 ditto	4
Total	62

Cavalry Female Hospital.	Beds.
1 Ward of	12
1 ditto	2
Total	14

Artillery Hospital for a Light Field Battery.	
1 Ward for Male	12
1 ditto ditto	6
1 ditto ditto	2
1 ditto for Females	4
Total	24

Conclusion of the Government of India.—The conclusion on proposal No. 10 will also apply generally to this proposal. The Government of India approves of the proposed distribution of beds for hospitals intended to accommodate the whole of the patients in the upper floor. The specimen plan will illustrate the necessary revised distribution, when the lower floors are to be in part occupied by the sick.

Proposal No. 13.—That the beds be arranged on the opposite sides of the room, between the doors, and placed either parallel to the walls at the distance of four feet from them, or with their heads to the walls; that not more than two beds be placed in the wall-space between two doors on the same side of the ward, or between the opposite doors of the ward; that there be not less than half as many doors in the length of the ward as there are beds; and that the doors be in equal numbers on the opposite sides of the wards. Arrangement of beds.

Conclusion of the Government of India.—The Government of India approves of the proposal generally.

For hospitals in the plains of India, the side-openings should, as a rule, be doors. At hill stations, and in certain localities in the plains, both doors and windows may be resorted to, the proportion of each being regulated by local conditions of climate, &c.

In parts of the country in which the climate is exceptionally hot throughout the year, it may perhaps be sometimes desirable so to arrange the wards that there shall only be one bed between two doors, or between a window and a door.

Regarding the proposed parallel arrangement of beds, it is not at present necessary that the Government of India should give any orders.

Proposal No. 14.—That all large wards be 26 feet in width and 21 feet in height to wall-plate, and that the wall-space per bed in them be 10 feet, thus giving an area of 130 superficial feet per bed; that the wall-space per bed in wards for convalescents be 7½ feet only, which length will give an area of 97½ superficial feet per bed; and that in small wards the area per bed may average from 150 to 180 superficial feet per bed. Dimensions of wards, floor space for beds, &c.

Conclusion of the Government of India.—The Government of India considers that the space in the main wards should be as follows:—

In the plains—

10 running feet per bed.
24 „ „ width of ward.
20 „ „ height of wards from floor to wall-plate.

These dimensions give 120 superficial feet and 2,400 cubic feet per bed.

When the lower floor is not intended to be occupied by patients, the height from floor to wall-plate to be 16 feet.

In hill stations—

8½ running feet per bed.
24 „ „ width of ward.

Height of wards 16 to 18 feet, according to the altitude of the station.

These dimensions give 102 superficial feet, and 1,632 or 1,836 cubic feet per bed.

The space in the small wards should average, as proposed, from 150 to 180 superficial feet per bed; but 7½ running feet, and 90 superficial feet per bed, will suffice for the large convalescent wards of regiments.

Attendant's room and sculleries.

Proposal No. 15.—That an attendant's room and a scullery be attached to every large ward, and that it be an object to arrange the position of these offices so that they may also be within easy access of the small wards.

Conclusion of the Government of India.—The Government of India agrees to the proposal.

Lavatories and *privies for large* wards.

Proposal No. 16.—That a lavatory and privy be also attached, at the ends of the buildings, to each large ward, but cut off from it by a separately ventilated passage or lobby, or by both; and that the general plan of privy authorised for barracks, be adopted in preference to water-closets or water-latrines.

Conclusion of the Government of India.—The Government of India approves of the proposal.

Proposal No. 17.—That one or two small privies and lavatories be provided for the use of the patients in the small wards, and of the attendants.

Conclusion of the Government of India.—The Government of India approves of the proposal.

Day-rooms.

Proposal No. 18.—That day-rooms be allowed for the sick and the convalescents, and that in the large hospitals the dining-rooms and recreation-rooms for the sick be kept separate.

Conclusion of the Government of India.—The Government of India concurs generally in the proposal, but does not consider it necessary to provide separate apartments for messing and recreation, unless there be ample spare space in the lower floors, after providing for all other auxiliary purposes (as in the case of the regimental hospital in which all the sick are provided for in the upper story).

Occupation of lower floor.

Proposal No. 19.—That the day-rooms, the quarters for medical subordinates, and for hospital serjeant and orderlies, also the store-rooms, surgery, and receiving-room, be arranged for in the lower story of the hospital.

Conclusion of the Government of India.—The Government of India agrees to the proposal. The provision of the detached accommodation, proposed by the Government North-Western Provinces and the Sanitary Commission for Madras, would lead to an increase of expense, which seems not to be called for.

Out-buildings.

Proposal No. 20.—That the hospital kitchen, a privy and a lavatory for general use, the guard-room, a shed for ambulance carts, &c., and dead-house, be provided in out-buildings.

Conclusion of the Government of India.—The Government of India approves of the proposal, also of the recommendation of the Sanitary Commission for Bengal, in regard to subdivision of privy and lavatory. A separate cook-room for the attendants does not, however, appear to be necessary. Shelter for the horses and buggies for the medical officers will be provided in the shed for ambulance carts, hearse, doolies, &c.

Enclosure.

Proposal No. 21.—That the hospital enclosure be either a brick wall two and a half or three feet high, or an iron railing four feet in height, and that an iron railing be always adopted when the hospital is within 100 feet of the enclosure.

Conclusion of the Government of India.—The proposal is agreed to by the Government of India.

Plans.

Proposal No. 22.—That the several proposed plans of hospitals be approved.

Conclusion of the Government of India.—The Government of India approves generally of all the plans, and also of the accompanying additional specimen plans, that have been prepared by Lieut.-Colonel Crommelin, to meet the conclusions of the Government of India, in regard to the partial occupation of the lower floors by patients, and to the diminution of the complement of sick to be provided for to 10 per cent. of strength.

The out-buildings, on plan No. 1, are in the intervals between the two hospitals, and not to windward of them. The covered passages are low and arcaded, and would not interfere with ventilation. The distance between the end ward offices and the wards appears sufficient. A greater separation would much lessen the convenience of these offices.

The

The plan proposed by the Sanitary Commission for Madras is considered objectionable, in regard to the following points:—

1. The detached block containing the quarters of the apothecary, hospital serjeants, &c., is considered unnecessary, and, from its projection, would tend to obstruct the ventilation of the two wings of the hospital.

2. An operating theatre, a record-room, and a medical officers' committee-room, are not deemed requisite for regimental hospitals.

3. The position of the privies and lavatories, immediately behind the centre of each block, is not thought satisfactory, as these offices would constantly be to the windward of the wards.

4. There are no sculleries or rooms for ward attendants, and no quarters for medical subordinates, except the single set for apothecary.

5. The small wards, for two beds each, have no thorough ventilation, and the large wards have no end ventilation.

6. There is not a sufficient arrangement provided for separating the convalescents from the sick.

The principle of construction, recommended by the Government of Bengal, is not approved by the Government of India, as it is considered that a building constructed according to the proposed plan could never be properly ventilated.

Four specimen plans of hospitals for male patients, and one enlarged plan of end ward offices, are circulated for information and guidance.

A plan of regimental hospital, for female patients, will be issued as soon as the scale of accommodation to be provided for this class of patients has been settled.

Plans of detached wards for special diseases, and of out-buildings, such as privy, lavatory, cook-room, dead-house, shed for ambulance carts, &c., will also follow.

Hospitals for Native Troops.

Proposal No. 1.—That single-storied buildings, having their floors raised three feet in dry climates, and five feet in damp climates, should suffice for Native regimental hospitals, but that when space is restricted, or when it is required to accommodate more patients than can conveniently be placed on one floor, a second story may be resorted to. Single-storied buildings.

Conclusion of the Government of India.—The Government of India approves of the proposal. Where soils retain much moisture, the buildings should have a vaulted basement.

Proposal No. 2.—That a single building should suffice for every description of Native regimental hospitals. One building sufficient.

Conclusion of the Government of India.—The proposal is approved.

Proposal No. 3.—That the component parts of a Native regimental hospital should consist of— Component parts.

1. Wards for the sick.
2. Ward offices; viz., superintendent's rooms, sculleries, privies, and ablution-rooms.
3. Accommodation for Native doctors.
4. Dispensary and receiving-room.
5. Cook-room.
6. Out-door lavatory.
7. Out-door privy.
8. Guard-room.
9. Dead-house.
10. Servants' houses.
11. Enclosure wall or railing.

Conclusion of the Government of India.—The proposal is approved.

Detached wards for special diseases are not considered necessary for Native hospitals; a row of houses for Native establishment should be added to the list. See also conclusion under Proposal No. 12.

Proposal No. 4.—That the following number of wards should suffice:— Number of wards.

For Infantry Hospitals—Two general wards, and two small wards for special cases.

For Cavalry Hospitals—Two general and one small wards for a full regiment, and one general and one small ward for a detachment.

Conclusion of the Government of India.—The Government of India approves of the proposal.

Punkahs are not considered necessary for Native hospitals, and Native officers can be attended either in the small wards, or at their own houses.

Proposal No. 5.—That it does not seem necessary to provide convalescent wards for Native regimental hospitals. Convalescent wards.

Conclusion of the Government of India.—The proposal is approved.

Arrangement of beds.

Proposal No. 6.—That the beds should be arranged as recommended for European hospitals and barracks for unmarried European soldiers, viz., that they be arranged on the opposite sides of the wards, with their heads to the walls; that not more than two beds be placed in the wall-space between two doors on the same side of the ward, or between the opposite doors of the ward; that there be not less than half as many doors in the length of the ward as there are beds.

Conclusion of the Government of India.—The proposal is approved.

Dimension of wards.

Proposal No. 7.—That all large wards should be 26 feet in width, and 16 feet in height from floor to wall-plate, and that the wall-space per bed should be 7½ running feet, thus giving an area of 97½ square feet per bed.

Conclusion of the Government of India.—The Government of India considers that the space should be as follows:—

Width of ward - - - - -	22 feet.
Height of ward - - - - -	16 „
Wall-space per bed - - - -	9 „
Area per bed - - - - -	99 sup. feet.
Cubic feet per bed - - - - -	1,584 cubic feet.

Attendant's rooms.

Proposal No. 8.—That an attendant's room, scullery, privy, and ablution-room should be attached to each large ward.

Conclusion of the Government of India.—The proposal is approved. See also conclusion under Proposal No. 12.

Dispensary.

Proposal No. 9.—That quarters for the Native doctor and the dispensary should be placed in the hospital proper, close to the wards.

Conclusion of the Government of India.—The proposal is generally approved of by the Government of India. See also conclusion under Proposal No. 12.

Out-buildings.

Proposal No. 10.—That a cook-room, a privy, a lavatory, a guard-room, and a dead-house should be provided in out-buildings.

Conclusion of the Government of India.—The Government of India approves of the following recommendations, that have been made by the several authorities regarding out-buildings:—

The cook-room to be divided into two compartments, one for Hindoos and one for Mussulmans; a well-ventilated building, 36 × 14, divided in the centre by a cross wall, and having doors at the opposite ends, will suffice.

The out-door lavatory to consist of a well, surrounded by a broad and well-raised chabutra, but without roof or screen wall. A separate well for drinking water, and for culinary purposes, is only to be allowed when the lavatory-well does not afford a sufficient supply for all purposes.

As it is not customary to carry out post-mortem examinations in native hospitals, a simple enclosed shed, 12 feet square, will answer as a dead-house.

Day-rooms, orderlies, &c.

Proposal No. 11.—Special accommodation is not necessary for day-rooms for the sick, for stores, hospital serjeant, or orderlies.

Conclusion of the Government of India.—The proposal is approved.

Plans.

Proposal No. 12.—That the proposed two plans of hospitals be approved.

Conclusion of the Government of India.—The Government of India approves generally of the plans, with the necessary modifications, to meet the conclusions regarding width of ward and running feet per bed.

The plan proposed by the Madras Commission is open to objection, in consequence of the position of the wash-houses and privies being immediately behind the two wings of the hospital, and because the projection of the central administrative offices would interfere with the ventilation of the wards.

The Government of India considers that the number of apartments, provided in the plan, for administrative and other purposes will all be required, but that the precise way in which they should be turned to account may be left to be determined by experience.

The foregoing are the conclusions upon the whole of the proposals brought forward by Lieutenant

Lieutenant Colonel Crommelin; it remains only to specify the number of patients to be provided for in the hospitals for regiments of infantry and cavalry.

Infantry—	
Full regiment	50 beds.
Cavalry—	
Full regiment	25 „
Wing at head quarters	13 „
Detached wing	12 „
When a squadron is detached—	
Head quarters	17 „
Detachment	8 „

Appendix IV.

General Orders of Government and of the Commander in Chief, relating to the Sanitary Condition or Comfort of the Troops.

(Published during 1866.)

Issue of *kunaths* to the field latrines. G. O. C., No. 6 of 4th January 1866.

Employment of serjeant cooks in regiments. G. O. C., No. 54 of 15th January 1866.

Fixing September as the time of annual works exhibition in each year. G. O. C., No. 163 of 14th February 1866.

Conservancy establishment for native regiments having latrines sanctioned. G. O. C., No. 305 of 28th March 1866, and No. 1069 of 3rd December 1866.

Placing the cantonments of Mhow, Neemuch, and Nuseerabad under the Bengal Government. G. O. C., No. 494 of 28th May 1866.

Instructions for the guidance of committees on rations. G. O. C., No. 527 of 11th June 1866.

Soldiers to wear helmets when out of doors. G. O. C., No. 768 of 3rd September 1866.

Issue of soap, as an experimental measure for one year, to the sick in European hospitals. G. O. C., No. 815 of 19th September 1866.

Supply of beds and pillows to troops on board ship. G. O. C., No. 935 of 24th October 1866.

Issue of oil for staff serjeants. G. O. C., No. 1042 of 27th November 1866.

Establishment for lighting. G. O. C., No. 1068 of 3rd December 1866.

Conservancy establishment for native infantry regiments.

Permitting the last issued *satrunjee* to be taken on board ship. G. O. C., No. 1146 of 26th December 1866.

Appointing the port surgeon a member of the committee for survey of transports. G. G. O., No. 10 of 5th January 1866.

Money prizes to regimental workshops. G. G. O., No. 25 of 12th January 1866.

Annual invaliding committee rules. G. G. O., No. 80 of 6th February 1866.

Cholera patients, how to be encamped. G. G. O., No. 94 of 9th February 1866.

Meat-safes and towel-racks to European hospitals. G. G. O., of No. 118 of 20th February 1866.

Accommodation for native troops and their families on board ship. G. G. O., No. 183 of 16th March 1866.

Issue of an English blanket (in addition to the double country one, now supplied in the plains) to each European soldier, while at the Sanitarium at Mount Aboo or Poorundhur. G. G. O., No. 187 of 20th March 1866.

Rules for the subsistence and maintenance of European prisoners. G. G. O., No. 261 of 23rd April 1866.

Swabs for washing stone floors of barracks. G. G. O., No. 267 of 25th April 1866.

Issue of warm clothing to native troops ordered for duty to Andamans. G. G. O., No. 336 of 30th May 1866.

Issue of *numda* mattresses to European troops. G. G. O., No. 368 of 20th June 1866.

Supply of lamps and oil to the schools of batteries of Artillery.

Issue of charcoal. G. G. O., No. 417 of 18th July 1866.

Supplementary conservancy rules. G. G. O., No. 455 of 7th August 1866.

Tea-strainers and coffee-mills and roasters for European troops. G. G. O., Nos. 475 of 15th August, 526 of 29th October, and 653 of 23rd November 1866.

Allotment of the number of men to European soldiers' tents. G. G. O., No. 511 of 7th September 1866.

Establishment and furniture for lighting barracks. G. G. O., No. 525 of 13th September 1866.

Revised establishment for a regiment of British Cavalry and Infantry. G. G. O., No. 547 of 26th September 1866.

Issue of oil, "all night," to serjeant-major and quartermaster-serjeants of isolated batteries of Artillery. G. G. O., No. 557 of 5th October 1866.

Embarkation rules for troops. G. G. O., No. 592 of 24th October 1866.

Dressers for barrack cook-houses. G. G. O., No. 593 of 25th October 1866.

Addition of essence of beef to the reserve stock in hospital. G. G. O., No. 666 of 5th December 1866.

Issue of galvanized iron pails, in lieu of raised sinks, for small cook-houses, G. G. O., No. 668 of 5th December 1866.

Supply of bedding to European troops on board ship. G. G. O., No. 686 of 12th December 1866.

APPENDIX V.

Separate G. O. C., p. 35, paras. 11 to 13 and 16, and pp. 36 and 37, paras. 34 to 49. G. O. C., No. 278, 16 March 1865.

RULES Supplementary to those already Existing, as per Margin, for the better Conservancy of MILITARY CANTONMENTS in this Presidency.

Board of health.

1. THE conservancy of every station is under the regulation of the Board of Health, composed of the senior regimental officer, the senior executive medical officer, and the executive engineer, with the station staff-officer as secretary and executive officer.

Duties of Board.

2. The duties of this Board are to exercise a strict supervision over the conservancy arrangements throughout the station, and to watch the working of station and regimental conservancy establishments.

Weekly reports to be made to the Board.

3. The Board will require weekly reports from the following officers, to the effect that the parts of cantonments over which they have control, and are responsible, have been inspected, and are kept clean :—

For church compound and graveyard.	Chaplain.
For drainage, workshop and yard, as well as for Government or contractor's brick-kilns.	Executive engineer.
For Sudur or station bazaars, and all places under them, such as public latrines, &c.; also staff lines, merchants' quarters, and all other parts of cantonments not under any regimental or departmental authority in particular.	Cantonment magistrate or officers in charge of bazaars.
Bakery, slaughter-house, cattle-yards, and their vicinity.	Commissariat officer.
For barrack-yards, officers' quarters, barracks, hospital privies, urinaries, &c.	Regimental, commanding, and medical officers.

Board to report monthly.

4. The Board is to report monthly on the sanitary state of the cantonment generally, for the information of the divisional or district commander. The report to be forwarded through the officer commanding the station.

Extra conservancy establishment.

5. All questions involving extra conservancy establishments, whether for cantonments, or regiments

regiments in quarters, should be reported on by the Board, previous to being submitted to the officer commanding the division or district, for disposal, by the officer commanding the station.

6. Station conservancy establishments are allowed for the various cantonments in the Presidency, in addition to the regimental establishments. A fixed proportion of the charge will be borne by Government at each station, the remainder being defrayed from the cantonment fund. **Cantonment conservancy establishment.**

7. It is left to the discretion of the Board to distribute the station carts and establishments laid down, as may be considered best for the attainment of the object in view. **Their distribution.**

8. The proportion of the pay of the establishment to be borne by Government is to be drawn in the usual manner in bills on the pay department, by the officer in charge of the conservancy establishment. **Mode of drawing their pay.**

9. On the march of a regiment or detachment, a certificate, signed by the officer commanding the regiment or detachment, and the barrack master, that the whole of the regimental lines are left in a clean and habitable state, must be sent to the secretary for the information of the Board of Health. **March of troops.**

10. It must be considered the duty of every officer or resident in a station to bring to the notice of the Board, in a memorandum to the Secretary, any sanitary irregularity that may happen to come under his observation. **Reports of sanitary irregularities.**

APPENDIX VI.

DIET TABLE for MILITARY PRISONERS above a Month in Prison, and at Hard Labour.

Daily—	*Oz.*
Meat without bone	8
Bread	16
Succulent vegetables and potatoes	8
Soojee, for gruel at night	3
Rice, for gruel in the morning	3
Sugar, for soojee gruel	$\frac{1}{2}$
Salt	$\frac{2}{3}$
Black pepper	$\frac{1}{32}$
Thrice a Week—	
Pearl barley, for soup	2
Vegetables, onions, &c. for soup	2

Gruel, it is proposed, should take the place of tea and coffee, as it does in the Bombay prisons. It adds to the nourishment, which tea and coffee do not; while the nervine virtues and supposed power of these to check excessive waste of the body ought not, under the circumstances, to be required.

APPENDIX VII.

ANALYSES OF WATERS.

KIRKEE.

WATER from Moota River.

Drawn April 1866:

	In Imperial Gallons.
	Grs.
Total solids, dried at about 300 degrees	11·34
Chlorine, estimated volumetrically	2·27
Organic matter, estimated by permanganate of potash.	2·45
Degrees of total hardness (Clark's scale)	7·38
Degrees of permanent hardness	·24

POONA.

WATER from Moola River, above Poona City Bund.

Drawn April 1866:

Total solids, dried at about 300 degrees	10·89
Chlorine, estimated volumetrically	2·35
Organic matter, estimated by permanganate of potash.	1·37
Degrees of total hardness (Clark's scale)	—
Degrees of permanent hardness	3·5

WATER from Moota Moola River, at Jamsetjee Bund.

Drawn April 1866:

Total solids, dried at about 300 degrees	10·17
Chlorine, estimated volumetrically	1·67
Organic matter, estimated by permanganate of potash.	2·14
Degrees of total hardness (Clark's scale)	5·04
Degrrees of permanent hardness	1·82

WATER from Poona Gaol Well.

Drawn 31st October 1866:

Specific gravity 1000·28	
Organic matter	2·25
Chloride of sodium	2·96
Carbonate of Soda	1·23
Carbonate of Lime	8·23
Carbonate of magnesia	2·59
Carbonate of iron	Faint trace.
Silica	3·34
Sulphate of soda	Faint trace.
Total	20·60
Total solids, by evaporation, dried at 280° F.	19.32
Clark's degrees of hardness	13·11

No trace of nitric acid.

MAUNDERDEO.

WATER from the Well in the Garden.

Drawn 1st June 1866:

	In Imperial Gallons.
	Grs.
Specific gravity 1000·23	
Organic matter	1·40
Chloride of sodium	1·49
Sulphate of soda	2·82
Carbonate of lime	3·78
Carbonate of magnesia	·23
Silica	3·42
Total Solids	13·14
Total Solids, dried at 300°	12·51
Clark's degrees of hardness	4·05

No trace of nitric acid.

WATER from the Well close to the Bazaar.

Drawn 1st June 1866:

Specific gravity 1000·23	
Chloride of sodium	1·72
Sulphate of soda	2·19
Carbonate of lime	3·35
Carbonate of magnesia	·85
Silica	4·25
Organic matter	·84
Total Solids	13·20
Total Solids, dried at 300°	12·65
Clark's degrees of hardness	4·56

No trace of nitric acid.

BARODA.

WATER from Well near Parade Ground.

Drawn 17th May 1866.

Specific gravity 1000·42	
Chloride of sodium	2·70
Sulphate of soda	·87
Carbonate of soda	3·82
Carbonate of lime	2·90
Carbonate of magnesia	9·82
Silica	2·80
Organic matter	1·40
Total	23·77
Total Solids, dried at 300°	23·17
Clark's degrees of hardness	14·9

No trace of nitric acid.

ANALYSES OF WATERS—*continued.*

AHMEDABAD.

WATER from a Well on the East of Artillery Stackyard.

Drawn 12th July 1866:

	In Imperial Gallons.
	Grs.
Specific gravity	1000·45
Chloride of sodium	3·47
Sulphate of soda	·23
Carbonate of soda	5·18
Carbonate of lime	4·48
Carbonate of magnesia	5·61
Silica	2·03
Organic matter	3·82
Total	24·82
Total Solids, by evaporation dried at 300°	24·92
Clark's degrees of hardness	10·09

WATER from a Well near Hurry Naique's Plot of Ground.

Drawn 12th July 1867:

Specific gravity	1000·53
Chloride of sodium	4·61
Sulphate of soda	·67
Carbonate of soda	8·66
Carbonate of lime	3·59
Carbonate of magnesia	3·00
Silica	3·85
Organic matter	2·96
Total	29·56
Total Solids, by evaporation dried at 300°	30·10
Clark's degrees of hardness	6·59

WATER from a Well South-east of the Artillery Haystack.

Drawn 12th July 1867.

Specific gravity	1000·52
Chloride of sodium	4·10
Sulphate of soda	·41
Carbonate of soda	7·87
Carbonate of lime	3·77
Carbonate of magnesia	3·48
Silica	3·57
Organic matter	2·24
Total	25·44
Total Solids, by evaporation dried at 300°	25·90
Clark's degrees of hardness	7·25

BELGAUM.

WATER from the Fort Barrack Well.

Drawn 5th June 1866:

	In Imperial Gallons.
	Grs.
Specific gravity	1000·49
Organic matter	2·44
Chlorine	3·97
Lime	4·42
Magnesia	·93
Sulphuric acid	1·32
Total Solids, dried at 300°	23·87
Clark's degrees of hardness	9·86

No trace of nitric acid.

WATER from Fort Hospital Well.

Drawn 5th June 1866:

Specific gravity	1000·53
Organic matter	1·68
Chlorine	5·33
Lime	3·44
Magnesia	1·26
Sulphuric acid	1·32
Total Solids, dried at 300°	29·86
Clark's degrees of hardness	8·80

No trace of nitric acid.

WATER from the European Infantry Barrack Well.

Drawn 5th June 1866:

Specific gravity	1000·31
Organic matter	2·80
Chlorine	2·36
Lime	4·23
Magnesia	·54
Sulphuric acid	A trace.
Total Solids, dried at 300°	14·28
Clark's degrees of hardness	8·69

No trace of nitric acid.

KURACHEE.

WATER from Hubb River.

Drawn 24th December 1866:

Specific gravity	1000·95
Chloride of sodium	40·14
Sulphate of soda	8·36
Sulphate of lime	19·40
Carbonate of magnesia	5·37
Silica	1·29
Organic matter	·24
Total	74·80
Total Solids, by evaporation	75·53
Clark's degrees of hardness	20·65

No trace of nitric acid.

APPENDIX VIII.

RULES for the VENTILATION of TRANSPORTS.

(*a.*) There should be as few partitions as possible in the accommodation between decks that is allotted to troops. The partitions that are absolutely required should be of fixed louvre boards, allowing of the free passage of the air.

(*b.*) There should be two ventilating shafts at the extreme ends of the portion of the ship, that is given up to the troops. Each shaft should be at least two and a half feet square, or should have a sectional area of six and a quarter square feet. The under end of the shaft should be flush with the lower surface of the upper deck. If the whole of the space between decks is occupied by the troops, unless the ship has a flush upper deck, the foremost shaft will have to be carried through the forecastle by boxing, and the foremost shaft will have to be carried in like manner through the poop deck.

(*c.*) There should be four substantial metal tubular ventilators, reaching above the level of the bulwarks,and with moveable cowls, that may be easily trimmed, so that their mouths may always face to the leeward. Two of these ventilators should be firmly fixed on the starboard and larboard sides, about one-fourth of the total length of the troops' deck from the foremost end; and the other two, in like manner, at one-fourth the length from the after end. Each tube should be 18 inches in diameter, and its lower aperture should be flush with the lower surface of the upper deck, and should have a horizontal screen fixed below it, at a distance of nine inches. The screen should be broader than the aperture of the tube, and should extend beyond it on all sides. The interval of nine inches should be kept clear on all sides of the aperture.

Two more of these tubular ventilators should be added, and should be placed starboard and larboard, at mid-length of the troops' deck, when the number of persons exceeds 500.

(*d.*) There should be a deck scuttle 12 feet long and about 18 inches wide midway between the main and fore hatchways. This may be made by raising portions of the midship planks of the deck. This scuttle should have high combings to prevent water going below when the decks are washed, and the means of closing it in bad weather should always be at hand.

(*e.*) There should be booby hatches with sliding doors, to be put on the hatchways in bad weather.

(*f.*) At the sides of each hatchway there should be canvas screens on rollers, and which may be let down as a protection to those near from chilling winds.

APPENDIX IX.

RULES for the TREATMENT of SICK TRAVELLERS by VILLAGE PATELS.

1. It is the duty of the police patel to assist any traveller, whatever his race may be, who from sickness is unfit to continue his journey, and especially not to allow the sick traveller to suffer from want of shelter, of food, or of attendance.

2. On hearing of any such person having arrived at the village, or being on the road, or in the fields, in a helpless state of sickness, the police patel should at once ascertain all the circumstances of the case.

3. The sick, helpless traveller should be taken to a *dhurumsala* or *seraee*, or to other available shelter, and the police patel should ensure that he is supplied with necessary food and water, and such other aid as his sickness may require, and as can be given. He should protect the sick person's property from theft.

4. The police patel should at once send a messenger to inform the friends of the sick man of his condition, if they are in the same *talooka*, or in any village not more distant than if they were so. Otherwise he should, without delay, report all the circumstances of the case to the foujdar or mamlutdar, who will acquaint the friends with the traveller's state, or if necessary, will arrange for his removal to hospital or to his home.

5. If the sickness of the traveller is cholera, he should be accommodated outside the village in a vacant building, if there is one procurable, or, if there is no such building, he should be sheltered as well as possible with a *pal* or tent, or a booth under a tree, but not near a well or a tank. The police patel should arrange also that the sick person has an attendant, and that all his wants are supplied.

6. The *lota* of a person ill with cholera must not be used in drawing water for him from the well or tank. The water he requires must be drawn otherwise, and then poured into his own *lota* or cup.

7. The

7. The surface earth of any floor, on which a person sick with cholera has lain, should be scraped off and buried at a distance from water or houses, in a hole dug for it in the ground, and a hole should be dug for the sick man's vomit, and other discharges.

8. In the absence of the police patel, the revenue patel should carry out these rules.

9. The patel should be allowed to send the mamlutdar a memorandum of expenses incurred, which, if found correct and reasonable, should be paid, in the event of there being no friends of the sick man able to defray the charges.

INSPECTION REPORTS.

REPORT of the INSPECTION of the CANTONMENT of AHMEDABAD.

(Inspected on 17th January 1866.)

PRESENT:

A. H. Leith, M. D., President.
Colonel H. W. B. Bell, R. E., Member.
T. B. Beatty, M. D., Member and Secretary.

The cantonment of Ahmedabad is in latitude 23°, and is in British territory in Goozerat, on the left bank of the Saburmuttee river. It is about 60 miles from the shore of the Gulf of Cambay, and only 155 feet above the high spring-tide sea-level. There are no hills within a distance of many miles, and the level country around is under cultivation, its chief produce being cereals, oilseeds, and pulses.

2. Ahmedabad has railway communication with Bombay and Baroda, the former being 306 miles distant and the latter 61½ miles. The railway passes close to Bulsar, which has been resorted to for several years past, in the hot season, as a coast sanitarium. The distance of Bulsar is 185½ miles. The communication with Deesa, which is about 93 miles to the N. N. W., is by an unmade, sandy road. The hill sanitarium of Aboo is about 50 miles north-east of Deesa, and the road to it also is not made.

3. The Saburmuttee, at about a quarter of a mile north of the cantonment, runs westward, and then, taking a southerly direction, forms the western boundary of the military station for about a mile and a half, and flowing on, it passes the city of Ahmedabad, which is a mile and a half from the southern limit of the cantonment. The average width of the river from bank to bank is here about 590 yards, but in the dry season the stream occupies only a very little portion of the channel, although it never ceases to flow except after great drought. The bed is of siliceous sand, and the water is clear.

4. On the south and east sides of the cantonment and on the strip between it and the river, to the northward, there is dry cultivation. The cantonment has an area of about 1,189 acres. The surface is level and even, except at the north-west corner, where there are deep watercourses near the river. The soil is sandy, and water is found at about 30 feet below the surface. There is a considerable number of trees, and the officers' quarters in the centre of the cantonment, and the Native Infantry lines on its west, are the parts most shaded by them.

5. The yearly rainfall is about 23 inches, and in the early part of the south-west monsoon it is not sufficient to subdue the great heat that is caused by the nearly vertical sun in its tardy progress in the neighbourhood of the tropic.

6. There are no thermometric observations on record of sufficient accuracy to allow of the temperature of the seasons being satisfactorily deduced from them. There are no special arrangements made at the hospitals to obtain the maxima and minima of the temperature of the external free air. The direction of the wind cannot be satisfactorily ascertained from the inexact records of the hospitals. Those records tend to show that wind from the south of west are most prevalent. At Deesa the result of observations, extending over several years, shows that the south-west is the point from which the wind chiefly blows in the hot season, and, as there is only an unobstructed plain between the stations, what has been ascertained regarding one may be assumed as applicable to the other.

7. There is good ground for a cantonment on the right bank of the river, where the remains of the lines of the Goozerat Horse still exist, and between those lines and Dhoolia Kote, where the annual practice of the artillery takes place. Were it found necessary, for strategic or other reasons, to remove the troops from their present ground, that on the right bank might be occupied, with the advantage of the troops being more removed than they now now are from risk of participation in the epidemic diseases of the neighbouring city population.

8. The European troops at Ahmedabad consist of the head-quarters of a brigade of artillery, a field battery and two divisions of another battery which has latterly been stationed there instead of at the more unhealthy cantonment of Baroda, to which place, however, it sends a division that is relieved monthly.

9. The admissions into hospital from all causes during the year 1865 were 227 per cent. of the strength, and from fever they were 56, or more than half the strength. From dysentery they were 3½ per cent., and 16 per cent. from diarrhœa.

10. The artillery lines occupy the south-east part of the cantonment. There were barracks for single men, all with the same, nearly south-west, aspect. Two of those barracks are in line, and have an interval of 50 feet between them; the third is 660 feet to the left front, or south of the nearest of the two. The married men's quarters were in echellon, each with the same aspect as that of the single men's barracks. There were three blocks, built in parallel lines, which were about 150 feet apart; the distances of the blocks from corner to corner being 180 feet, and the distance of the nearest block from the single men's barrack in front of it was about 540 feet. The horse lines were 380 feet to the left rear of the most southerly barrack of the single men, and the Native followers' lines were south-east of the horse lines. A Romish chapel and the canteen stood between the family quarters and the barracks. The plunge bath is a little more than a furlong westward of the barracks, and the hospital is about three furlongs distant in the same direction, and about 200 yards from the river.

11. *The Single Men's Barracks.*—They are ground-floor buildings of the description of those provided for the Persian Field Force. The walls of one are of sun-dried brick, and those of the others of burnt brick, with mud instead of lime mortar. In one the floor was of brick laid in lime mortar, and in the others it was earthen; the work of laying the present floors with pavement of a rather soft sandstone was in progress. The verandas in front and rear are 10½ feet wide, and have earthen floors; the floors were wet where the filters stood. The roofs are tiled, and have a raised portion, to afford a continuous ventilating opening eight inches wide, over which the eaves project three feet. The side openings of the barrack are doorways and windows, the latter are 3 feet by 4 feet clear of the frame; they have glazed casements opening inwards. There was a cot between every two side openings, and it had eight feet running measurement. The barrack rooms are all 22 feet wide, and 15½ high to the top of the side wall. There is a row of posts along the middle of the room giving support to the roof. The lengths of the men's barrack rooms vary from 247½ to 254 feet.

12. *Serjeants' Quarters.*—There are quarters for two serjeants at each end of all the buildings. The quarters are under the slope of the roof, being partitioned off at the last centre post, and consist of two rooms for each, with dimensions of about 11 feet by 10¼ feet and 11 feet by 8½ feet, but they vary a little; the two rooms are separated by a wall only seven feet high; the outer walls are of the height of the veranda post plate, or 8½ feet. These rooms have glazed windows, but, besides these and the doors, they have no means of ventilation. There are green coloured bamboo screens to shade the verandas of the barracks, and punkahs are used in the barrack rooms in the hot season.

13. *Serjeants' Mess-room.*—The sun-dried brick barrack had about a fourth of its length partitioned off by a wall reaching to the beam, to form a serjeants' mess room, 187½ feet being left as dormitory accommodation for the men. The accoutrements were liable to be attacked by white ants, when hung against the wall in this barrack.

14. There were no dining or day-rooms for the men. A serjeants' quarter in one of the barracks had been converted into a library and reading-room. Plans for a fives court and skittle alley were said to be under preparation. There was an existing skittle alley, the property of the artillery brigade.

15. An *Ablution-room, Cookhouse,* and *Latrine,* according to plans before approved of by the Commission and sanctioned by Government, were under construction.

16. *Canteen.*—This building is of brick and lime mortar, on a two feet plinth. The principal room is 30 by 20 feet, and its height is 15 feet. Adjoining to its end there is a liquor store 10 feet long. These two rooms are paved with brick, and the open veranda on the south-west side, which is 9¾ feet wide, has a floor of Portland cement, which was found to be out of repair. In the canteen, at the inspection, there was the cot of a soldier, who said he slept there to guard the liquor.

17. The coffee-shop was a temporary thatched hut, in the rear of and near the barracks.

18. Additional temporary accommodation was being constructed, to allow of each man having 90 superficial feet of floor; the addition consisted of two barracks, each to hold 24 men and a serjeant. Day-rooms were included. It was arranged that the two new buildings should be placed, one in the interval between the more southerly of the two old adjacent barracks and the old barrack standing alone, forming an echellon with them; the other new barrack in a line with and to the southward of the old barrack nearest to the gun-shed.

19. *Family Quarters.*—Each of the three blocks has accommodation for six families. The

Thebuildings are on plinths that have an average height of one foot, but that in some parts are but eight inches high; they are of brick and lime, and are tiled and have brick floors. On the south-west side only is there a veranda; it it 7½ feet wide, and has a dwarf wall: the post-plate is nine feet high.

20. Each family has a front room 16 feet by 12 feet, with a height of 12 feet measured to the top of the side wall, and a back-room 16 feet by 10 feet, with its rear wall only 7¾ feet high. The partition between the rooms is built up to the slope of the roof. The front and rear rooms have their communication by a doorway, with a plank or pannelled door. Each room has a door with a moveable fanlight and glazed window, and the ventilation depends altogether on these being opened by the inmates. Wet *tattees* were used during the hot season. The two end quarters of each block have bath-rooms attached to them.

21. In rear of each range there is a common cook-house without a chimney, and with a large recently constructed masonry cesspit adjoining it. In a line with the cook-house there are two ablution rooms under one roof. There is no drainage provided for these.

22. Farther in rear, at about 72 or 75 feet distant from the block, there are two latrines, about 50 feet apart, one for men, the other for women; each has two seats, and at the end of the men's privy there is a urinary. A masonry cesspit has recently been constructed in rear of each of the latrines. Two additional blocks of quarters were about to be built, in positions that would change the echellon arrangement into a quincunx.

23. *Staff Serjeants' Quarters.*—These non-commissioned officers are very badly accommodated in temporary thatched huts, which are unprovided with proper ablution or other subsidiary conveniences.

24. *Quarterguard.*—It is on a line with the most southerly barrack, and in front of the other two. It is a new building of brick and lime, and double tiled, on a plinth two feet high, and with an open veranda on all sides 10 feet wide, and with the post-plate 8½ feet high. The inner dimensions are, a width of 20 feet, a height of 15¼ feet, and a partition wall divides the length into portions of 30 feet for the room for the guard, and 10 feet for a lock-up. The floors of the rooms are of concrete. There are no roof-ventilators. The side openings of the guard-room are partly doors, partly unglazed windows with plank shutters, opening inwards. There were 12 cots in this room, for each of which there were only 50 superficial feet and 775 feet of space.

25. In the *Lock-up* there were four barred, unglazed windows with shutters opening inwards, and a plank door opening into the guard-room. There were four cots in this detention-room, for each of which there were the same superficies and space as for those in the adjoining room. It was said that even more than four men were known to have been shut up together in the lock-up.

26. There are a new privy and a urinary under one roof for the use of the guard; the former has one seat, but it is not adapted for the new pattern soilpan. The floor was of earth, but it was intended to lay it with brick pavement. The ventilation was effected by honeycomb masonry.

27. The *Solitary Cells* are directly to the windward, or south-west of the quarterguard, and at a distance of about 150 yards from it; they are six in number, and are built in two rows, 13½ feet distant, and with intervals of eight feet laterally between cell and cell, those of the front row exactly covering those behind, while the building for the accommodation of the guard is nine feet to the windward of the middle front cell; they are on high plinths, and are built of brick, with tiled roofs and earthen floors. Each has a floor of only 10 feet square, and the walls are 20 feet high. There is no ceiling. The doorway is on the south-west; there is an iron-barred door as well as one of plank. There are three ventilating openings in the walls, each six inches by three, on the level of the floor; and on each of the four walls, at a height of 18 feet, there is a circular ventilating opening 1½ foot in diameter. There are no verandas to protect the walls from the heat of the sun's rays. The only defence from the weather is a bonnet over the doorway.

28. In each cell there is a concrete sink in one corner, on which either the water jar or the urinal was placed; in the latter case the earthen floor was rendered damp or muddy by the water, and the urinal was even more offensive from the lime mortar under it being wetted, than it otherwise would have been. The urinal was of the old pattern; a globular iron vessel on a wooden trestle.

29. The *Guard-room* at the cells is built of brick and mud mortar on a raised plinth, with an earthen floor and double tiled roof. There is an open single tiled veranda in front and at the ends. There is no roof ventilation. The side openings consist of two doorways and four small unglazed windows, with plank shutters. There are two privies of two seats each for the prisoners and the guard. They have no soil pans, and have merely sloping pavement under the seats.

30. *Harness-room.*—It is near the horse lines and beside the gun-shed and workshops.

31. *Hospital.*—It is an enclosure adjoining that of the hospitals of the Native Infantry regiments. Its aspect is not favourable, being about a point and a half to the west of south. The building is on a plinth but one foot high, and at one part no more than nine

inches, and has a ground floor only. It is of temporary construction; the walls are of sun-dried brick, the floors of earth. The roof is double tiled, excepting over the verandas, where it is but single.

32. There are two wards for male sick; one is 80 feet long, 24 feet wide, and 17 feet high to the beam; the other, with the same width and height, has a length of 20 feet. There are two half-glazed doors, and six glazed windows on each side of the larger ward. There is cloth ceiling, but there is a continuous opening four feet wide in its middle, extending the whole length of the ward, which allows of the free action of the continuous roof ventilator. The rooms are provided with punkahs. The clear opening of the doorways is 4 feet by 7 feet, of the windows only 3 feet by 4 feet. The width of the windows at the inner part of their splay is $4\frac{1}{4}$ feet, and from the centre of one pier to the centre of the next there are $8\frac{1}{2}$ feet, which is the running measurement that each cot has, with the floor superfices of 100 feet, which, in the present emergency, is to be allowed in existing hospitals.

33. The other ward is 20 feet by 24 feet, and in height 17 feet, and would accommodate four cots. The entire number that the two wards can hold, at the reduced rate laid down for existing buildings, is 22. The number of beds that are required for a field battery at Ahmedabad, in accordance with the recently published rule, is 20, if Ahmedabad is classed, as it has hitherto deserved to be, among the unhealthy stations. As two thirds of another battery is now stationed here, 14 beds should be available for its sick. The hospital accommodation required for all the artillery amounts to 34 cots, and, as the existing wards hold only 22, there is a deficiency of 12 cots. During the last year the number of sick in hospital rose to 30, a number which occasioned much overcrowding.

34. There is a third ward under the same roof, which at the time of the inspection was reserved for female sick.

35. There is an open, earthen floored veranda on both sides, with a height of nine feet to the post-plate. There are rolling bamboo screens as a defence from glare. The surgery and dispensary, which are enclosed portions of the single-tiled veranda, are ill-ventilated and at times oppressively hot.

36. The lavatory has a low masonry bench on which to place the copper basins that are used, but it has no fittings, nor is there any screened compartment for private ablution. The privy is a continuation of the same narrow building in which is the lavatory, and there is a door of communication, through which the sick pass from the one to the other room. There is, however, another door to the privy, but there is no veranda nor covered passage to shelter the sick, were they to use it.

37. There had been recent alterations in the latrine, and the seats were partitioned, but they had no doors nor front screens. There were iron soil pans, but the construction of the seats allowed of their being removed only from the front, so as to require the sweeper to come into the room for that purpose. There are seven seats, and over two of them there are windows that open objectionably close to the occupants' backs. The privy for the female sick is on the same plan, and has its windows in the same faulty position. There was a urinal in the men's privy, and the floor around it was wet and offensive. There is no roof ventilation.

38. The *Deadhouse* is a small, ill-lighted, unventilated, earthen floored room, in a low building, opposite and in view of the hospital wards.

39. An apprentices' new quarters were nearly completed. The building is on the west side of the small quadrangle formed by the offices in rear of the hospital; it is flat roofed, and consists of one room 12 feet by 10 feet, and is of little height; it has no veranda nor any conveniences.

40. The construction of a new temporary ward, for the treatment of the female sick, had been under consideration. This, when carried out, will leave the old female ward available for males.

41. *Native Infantry Lines.*—The streets were clean, and the huts of one of the two regiments had been recently rebuilt. There are no latrines for the Native troops, nor for the inhabitants of the Sudur Bazaar, and they resort to dry watercourses, appropriated by the brigade authorities for the purpose, in the north-west part of the cantonment. The nuisance caused by this arrangement is much complained of, and when the wind blows from that direction, the staff hospital and the left flank of the Native Infantry, which are nearest, cannot but be injuriously affected by it.

42. The Native Infantry Hospitals have no place in which the sick can bathe.

43. *Sudur Bazaar.*—There were enclosures, in which cattle were kept, that were in a filthy condition. The cantonment magistrate said that it was intended that the cattle should be removed from their present locality. On the bank of the river in rear of the bazaar there were huge accumulations of sweepings, which it was intended should be sold as manure. The places of deposit were most injudiciously chosen, both on account of the putrefying mass being so near to habitations, and because, during rain, the water flowing through them would contaminate the water of the river. It was said the manure would be removed before the ensuing rains.

44. Water

44. Water for drinking and other purposes is drawn from wells, about 30 feet deep in the sandy soil, and lined with brick and lime masonry.

RECOMMENDATIONS.

In a climate such as that of Ahmedabad, where the heat during part of the year is very great, and where miasmatic disease is prevalent, it is very desirable that such improved accommodation, as recently has been approved of for the European soldiery, should, as soon as possible, replace the existing temporary and faulty buildings.

(1.) New upper floor barracks, with subsidiary buildings, all according to the standard plan, should be built for the European force that it is intended shall be kept at the station.

(2.) A new hospital according to the standard plan, with subsidiary buildings, and with a detached ward for the treatment of sick and parturient females, should be built. The accommodation to be provided in the hospital should be calculated according to the scale for "*unhealthy*" stations, and all the sick should sleep in upper-floor dormitories. The new hospital might be placed on the left flank of the barracks, instead of beside the Native Infantry hospitals, as the present temporary hospital is.

Pending the construction of the permanent buildings, it is desirable that the existing temporary buildings should be improved in some points, that affect the health and comfort of the men.

(3.) A large temporary recreation or day room should be provided, for the use of the men of the old barracks; it would require to be a detached building, because there is no room to add such accommodation to the barracks, without interfering with ventilation.

(4.) The part of the veranda of each of these barracks, where the water filter stands, should be paved.

(5.) The serjeants' quarters at the ends of the barracks should be ventilated into the adjoining verandas, by openings at the top of the walls, and by revolving glazed fanlights over the doors and windows.

(6.) The canteen should be lengthened, to give a room at one end for the non-commissioned officers. An open veranda should be added in rear of the building. The present store-room should be converted into a bar by opening the partition wall between it and the larger room by a wide arch with a sliding door. The veranda in front and in rear, opposite to the smaller room, should be enclosed as store-rooms. All the rooms should have ventilators at the top of the walls, opening into the verandas. It was suggested by the Commission at the inspection that the windows of the canteen-room should be converted into doors, and this has, it is believed, been already sanctioned.

(7.) The family quarters should have the roof ventilation which, it is understood, has been sanctioned. A ventilating opening should be made, 2 feet by 2½ feet high, in the partition wall between the front and back rooms. The arch head of the doorway between the two rooms should be left open.

(8.) The old cook-rooms of the family quarters should be provided with chimneys. Their cesspools should be removed; moveable pails would be sufficient for the fluid refuse. The contents of these pails should be carried away daily by a conservancy tank-cart.

(9.) The privy cesspools of the family quarters should be removed.

(10.) The bath-rooms of the family quarters should be drained by pipes to a distance, where the waste water, if not utilised, might be absorbed by the soil without nuisance.

(11.) So soon as the block plan of the permanent barracks can be prepared and approved of, new quarters for the staff serjeants should be planned and constructed. For the present exigency a detached temporary bath-room and privy should be erected for each.

(12.) The present size of the dormitory for the men of the quarterguard is by far too small; the partition should be removed, so as to add the small lock-up room to it; there would then be the regulation allowance of 80 superficial feet to each of 10 men, sleeping in the room. The bedding of those on sentry should be kept on shelves. A lock-up of authorised size should be added. The roof of the building should be ventilated. The casements of the room should be glazed. A small ablution-room should be given to the guard.

(13.) The present cells, which are too small and are much crowded together, should, unless they can be economically enlarged to the regulation size of 130 feet floor area, be replaced with others, so arranged that the ventilation of none should be obstructed. If they are capable of being enlarged, three of them might be reserved and provided with verandas, to screen the walls from the sun-heat, and might be provided with a shuttered recess separately ventilated, in which to keep the urinal. The floor of the cell should be paved, and there should be a ceiling of plank, with a free grated opening for ventilation. The middle cell of the front row and the two outer cells of the rear row might be removed. The guard-room should be removed and rebuilt elsewhere. An ablution-room should be provided for the cells.

(14.) The hospital should be enlarged, so as to afford dormitory room for the full com plement of sick of one field battery, and two-thirds, at an unhealthy station; in all 34 men, and to give a day-room for the sick.

(15.) A female ward, with south-west aspect, and with matron's quarters and subsidiary accommodation, should be provided.

(16.) The veranda of the hospital should be double tiled, and the surgery and other veranda rooms should have large openings into the veranda high in the wall.

(17.) The cesspool of the hospital cook-house should be removed, and moveable pails should be used for fluid refuse.

(18.) A veranda, or covered passage, should be constructed along the west side of the building which contains the lavatory and privy, and the door on that side of the privy should be used by the sick, instead of their passing through the lavatory.

(19.) The seats of the privy should not only be separated by partitions from one another, but each should have a front screen. They are at present too high, and should be lowered. Alterations should be made so as to allow of the soilpan being removed from behind. There should be roof ventilation. The windows should be placed otherwise than close over the seats. The floor should be paved.

(20.) The lavatory should have two screened bathing-places, with doors for privacy, one for a tub bath, the other for a shower bath, which should be fed from an elevated cistern, in the way being carried out in the barrack lavatories. The washing basins should be supplied from the cistern through bib-cocks.

(21.) The waste water of the lavatory should be conveyed to a distance by pipe-drain.

(22.) The cesspools of the hospital privy and of the hospital serjeants' quarters should be removed.

(23.) Such alterations, recommended for the men's privy, as may be applicable, should be made also in the privy that has hitherto been used by the female sick.

(24.) The room which has recently been built for a medical apprentice should be converted into a dead-house, with the arrangements recommended for such buildings at Poona.

(25.) The building facing the rear of the hospital, and at present used as a dead-house, might be converted into apprentices' quarters.

Native Infantry Lines.

(26.) A bathing-room should be constructed for each of the Native infantry hospitals. It might be erected in each case, under a prolongation of the roof of the store-room, at the north corner.

Cantonment.

(27.) Latrines for males and for females of the two regiments, and for the population of the bazaar, should be erected.

(28.) The objectionable cow-houses, if not already removed to a distance from the populous parts of the cantonment bazaar, should be so at once, and cleanliness should be strictly enforced in them.

(29.) The accumulated sweepings, if not already removed from the bank of the river, should be removed without further delay.

(30.) The depositing of litter sweepings, or filth of any kind, should not be permitted on the river side, and should be restricted to some spot to eastward, at least half a mile from habitations.

(31.) It is very desirable that an arrangement should be made to supply both the troops and the city with pure water, raised from the river at a short distance above the cantonment.

(signed) *A. H. Leith*, M. D.,
Deputy Inspector General of Hospitals, President,
Sanitary Commission.

REPORT of the Inspection of the Artillery Lines, Baroda.

(Inspected 10th January 1866.)

Present:

A. H. Leith, M.D., President.
Colonel H. W. B. Bell, R.E., Member.
T. B. Beatty, M.D., Member and Secretary.

The small subsidiary British force maintained by the Gaekwar, occupies a cantonment in the vicinity of the town of Baroda, but on the opposite or right bank of the Vishwamitree river. The country around is a level, rich, alluvial plain, fully cultivated and

and copiously wooded, especially so beside its numerous villages. The elevation above the high-tide sea level is a hundred feet at the neighbouring railway station. There is communication by railway with Bombay, which is 244½ miles distant, the road passing by Broach, Surat, and Bulsar, and on the other side with Ahmedabad, 61½ miles nearly north-west by north.

2. The cantonment has an extent of about 600 acres of even and nearly quite level ground, in most parts shaded with large trees. The alluvial soil is here, as it is in the district generally, rather sandy; and, although beds of rolled quartz and sandstone pebbles are met within excavations, no hard rock *in situ* has been found. Water is reached in wells at a depth of 30 feet to 35 feet.

3. There is no series of trustworthy meteorological observations available for reference, those made in the hospitals being likely to mislead. The average rainfall is said to be 35 inches, and the prevailing wind during the hot season, blows from about the south-west. At that season the heat is oppressive.

4. The Vishwamitree river is sluggish and tortuous where it forms the eastern boundary of the cantonment. The usual width of its stream is about 25 yards, but it increases in the rains to about 65 yards. The right bank is rather low, and the river has been known to overflow it, and to lay under water the south and south-east parts of the cantonment, on which stand part of the officers' quarters, the Sudur bazaar, and the arsenal. About a third of the hospital compound was at the same time flooded.

5. The city is about half a mile to the south-east of the nearest part of the cantonment, and is approached by two bridges. It is very populous, and, on a cursory view of its by-streets, is seen to exceed in filth any town in the British territory under this Presidency that has been inspected.

6. The cantonment is somewhat elliptic in shape, with a very irregular outline. The Sudur bazaar, and a collection of huts called Kamateepoor, occupy the part nearest the city, and on the east of these there are the arsenal and the lascar lines. In the centre of the cantonment there are the officers' quarters, and at their east end there is the hospital compound, its buildings being 130 yards from the river. The artillery lines are towards the eastern part of the cantonment, with the nearest barrack 330 yards from the bank of the river. North of these stand the new lines of the Native infantry regiment. To the north-west and west of the artillery barracks there is the open parade ground, beyond which there are cultivated fields or gardens, and the Rewa Kanta and Baroda Residencies.

7. Within the military limits westward, there is a large unbuilt tank beside the Romish church and burial-ground, and the Jews' and Moosulmans'; the tank is about 680 yards from the artillery barracks.

8. There are open trenches in the neighbourhood of the barracks to carry off the south-west monsoon waters, and there are some raised footpaths from barrack to barrack, and leading to some of the subsidiary buildings.

9. There are four barracks of temporary construction, with an aspect N.W. by N. ½ N. Two are built in line, with an interval of 275 feet; the other two are placed in echellon, with the more easterly of these, the first at 100 feet in rear of it, and covered by its left end; the second 50 feet in rear of the first, and leaving a clear passage from front to rear, between their ends, of 35 feet.

10. There are other four older, ground-floor barrack buildings of permanent construction, 100 feet to the rear, at right angles to that of the newer ones, and with an aspect much better suited to the prevailing hot season wind, being S.W. by W. ½ W. One hundred and seventy-five feet further in rear are the guard-room, gun-shed, and canteen. The *horse lines* are about 500 feet from the nearest barrack, and their compass bearing from the buildings generally, is between the north and north-east points. The hospital is E.S.E. of the barracks, and close to its enclosure there are old mud huts that were formerly required for followers, but which are now either occupied by persons not belonging to the brigade, or vacant, and the receptacle of filth.

11. Two of the four barracks are on plinths, a foot and a half high, and the other two were built on three feet plinths, but the retaining walls of the plinths being thought insecure, their foundations have been ramped with earth to a height of two feet. The buildings are all otherwise alike. There was only one of the higher plinth barracks occupied at the inspection.

12. The walls are of burnt brick and lime pillars supporting the trusses, with the intervals filled with sun-dried brick; the roof is double-tiled, the floor is of concrete. There is an open eight feet wide veranda on all sides, with a brick floor. On the south side there is a false veranda of frames covered with bamboo matting. The floors of the barrack-room and veranda were out of repair, and the matted frames were tattered and untidy. The brick used in paving at this station was in all instances found to be ill-shaped and perishable.

13. On each side of the room there are 18 unglazed windows 3 feet by 4 feet, barred, and with plank shutters, and there are two doorways 4 feet by 7 feet. At each end there are a

doorway 6 feet by 7 feet, and two windows 3 feet by 4 feet, similar to those on the side, and made for ventilation, because the building was placed end to the wind. There is a ventilating opening, 18 inches in diameter, over each of the side doors and windows, and in the roof there are four large ventilators, each 10 feet long.

14. One corner of the room is partitioned off like a bunk, with a wall between five and six feet high, and communicating with an enclosed corner of the veranda, to afford quarters for a serjeant; is was occupied as a coffee-shop, and there was a charcoal fire burning in it.

15. The piers between the windows are seven feet in width, and only one cot was placed between every two openings, so that no man would have had less than 10 feet of running measurement, 100 superficial feet, and 1,550 cubic feet, had the piers of the room been fully occupied, but at the inspection there were but 31 of the detachment who slept in the barrack-room. The room was lighted with unshaded, or open, native lamps.

16. There is a *lavatory* with a masonry bench for basins, but without any fittings, or any privacy for bathing, and without glazed casements and covered passage from the barrack. This lavatory was not used as such, but as a place for storing grain for the horses, while the men used their washing basins in the barrack veranda, near the filter-stand. The earthern ramp was seen to be guttered, and muddy from the soapy water thrown on it. This irregularity, and the objectionable way in which the barrack and also the guard-room were lighted, were at once brought to the notice of the military authorities, and an order was consequently issued to rectify the evils complained of.

17. The other barrack on the three feet plinth was unoccupied and under repair; its concrete floor had been recently renewed. The other two barracks on lower plinths were also unoccupied at the time of the inspection, but, when the whole battery was at Baroda, one of these was divided into a schoolroom, schoolmaster's quarters, serjeants' mess-room, and a store-room, and the other was used as a theatre and lecture-room.

18. A new *latrine* had recently been constructed. It has 12 seats, separated by partitions, but without front screens. It is nearly 200 feet in rear of the occupied barrack, and almost on a line with, and between, the two older barracks. At the left rear of the front uninhabited barrack there is a urinary; it is 350 feet from the occupied barrack, and is not at that distance, likely to be resorted to, especially at night.

19. Besides that urinary, there is a *cookhouse* on the old plan, without a chimney.

20. On the left flank of the barracks there are *workshops* and a *library building.*

21. The *canteen* is on a two feet plinth, with walls of sun-dried brick, with pillars of burnt brick and lime-mortar to support the roof trusses. The roof is double-tiled, the floor is of brick, in bad repair. There is an open eight feet wide veranda on all sides. The centre room is 58 feet by 22 feet, and it is 15 feet high; it has four unglazed windows, and two doors on each side. At one end there is a spirit store, and at the other a *coffee-room*, which are separated from the centre room by partitions reaching to the tie-beam. Each of these end apartments has six windows and a doorway. A raised roof gives a continuous ventilating opening 10 inches wide, overlapped 2 ½ feet by its eaves.

22. The *quarterguard* has the same faulty aspect as the temporary barracks. It is a tiled building on a plinth only a foot high, and on that account it must be an unhealthy dormitory at this malarious station. It has a veranda on one side only, and it is but eight feet wide. The room for the guard is 40 feet by 18 feet and 13 feet high. The *lockup* is adjoining, and is entered from the guard-room. It is under the slope of the roof at one end of the building. Its dimensions are 18 feet by 9 feet; the only ventilation it has is by three barred windows, with clear openings 2 ft. 8 in. by 4 ft. 2 in. The floors are of concrete that had been lately laid down. At the south-west corner of the guardhouse there is an objectionable masonry urinal. At the time of the inspection the number of the guard amounted to four, and of these one was on sentry.

23. *Solitary Cells.*—There are six cells under one roof, with an open veranda 6 ft. 8 in. wide in front and in rear. Each cell is only 10½ feet by 6½ feet, or has little more than half the superfices that is now allowed.

24. Of the four old permanent barracks that face S. W. by W. ½ W., one was used as a schoolroom, another as a commissariat store-room; the most westerly had been partitioned for the accommodation of married men when the force was larger, and the most easterly is now divided into quarters for soldiers' families.

25. *Family Quarters.*—They are in the barrack last mentioned, which has a plinth only 1 ½ ft. high. It is 100 feet by 30 feet, with a front open veranda six feet wide, and a rear veranda of the same width, partly enclosed. The barrack is divided into eight quarters by transverse walls 12 feet high, or reaching only to the tie-beams, and every quarter is sub-divided by a canvas screen into a front room 18 feet by 11 ft. 9 in., and a rear room 12 feet by 11 feet, which open, by a door only, into the front and rear verandas. Every room has a ventilator in the tiled roof, like a dormer window, with merely a plank shutter that is opened and shut by means of ropes. There are no glazed windows. Four families were found in these quarters.

26. Detached from each end of this barrack, at a distance of 23 feet, there are two small

small bnildings; each has under its roof two bathing-rooms, and two privies with one seat each. In the interval between the bath-rooms and the main building there is a cooking-place enclosed with bamboo work.

27. *Staff Serjeants' Quarters.*—There are detached quarters for a serjeant major, consisting of three rooms of the dimensions 18 feet by 14½ feet, 12 feet by 14½ feet, and 12 feet by 7¾ feet, with an open veranda 7½ feet wide on one side only. The quartermaster serjeant's quarters have but one room 30½ feet by 15 feet, and a seven feet wide veranda on one side only. There are also quarters for a farrier major. All have out-offices, but none of these staff quarters were occupied since the head quarters of the battery was removed to Ahmedabad.

28. *Hospital.*—There are three ground-floor hospital buildings in one enclosure, all of the same dimensions, 96 feet by 22 feet, with walls 16 feet high, and a veranda 9 feet wide. They are placed so as to form three sides of a rectangle, but the blocks are separated from one another by intervals of about 50 feet. The middle building, facing west by south, was unoccupied. The two others, facing each other, are the hospitals of the regiment of Native infantry and the artillery. Their aspects are north by west and south by east. The most northerly of the buildings is the artillery hospital.

29. The veranda plinth is one foot high, but the floor of the ward is a foot higher. The floor is of bricks, of imperfect shape and bad quality, laid in lime-mortar, and has recently been renewed, as a precautionary measure, after the former floor had been soiled with the discharges of the cholera sick, during the epidemic visitation of last year.

30. There are six windows, 3½ feet by 5 feet, and two doors, 4 feet by 7 feet, on each side of the ward, and at each end a door, 4 feet by 7 feet. The piers between the side openings vary from six feet to 9½ feet, and there are 13½ feet of wall in each corner. On the ridge there are three ventilators 10 feet long, with louvre sides, partly matted up to exclude rain. Every window has bars, as in a prison, and has a plank shutter, but no glazed casement. The whole of the north veranda is enclosed, and it has glazed windows; this veranda is mostly used as a day-room; at its east end there is a store-room. At the south-east and north-west corners a dispensary and a surgery are formed by enclosing parts of the veranda. These rooms are 16 feet long and but 8 feet wide, and are each lighted and ventilated only by a door, and an unglazed window with a plank shutter.

31. Projecting from the north-east part of the building there is a *lavatory* 25 feet by 15 feet, and 7¾ feet high, with a masonry bench for basins of the inconvenient height of three feet. The room is without any fittings, or any screened bathing-place. It has a floor of concrete. There are no ventilating openings besides doors and windows. There are three glazed windows, 3 feet by 4 feet, on each side, and at each end there is a door, one of which opens into the enclosed veranda of the hospital, against which the room is built. There is no drainage for waste water.

32. The *hospital privy* is on the east of the building, and it is approached by a covered passage 96 feet long. The privy is 13 feet by 7 feet, and it has walls but 7½ feet high. It has a door, and a window three feet wide, but partly closed with wooden bars. It is unventilated and dark. There are five seats without partitions. Iron soil-vessels were in use. An offensive urinal of the old pattern, on a wooden stand, was placed at one end of the latrine. There is a cesspool in the rear, but it was not in use.

33. The *dead-house* is objectionably near to the hospital; it stands eight feet from the north-east corner and between the lavatory and the cook-house. The earthen floor is not raised above the level of the outer ground, and it is out of repair. The dimensions of the building are 11 feet by 7 feet. It has a door on one side, and a window at each end, closed with mat-covered frames hinged above.

There is no furniture, and there is no convenience whatever for the performance of pathological examinations.

34. The *hospital cook-room* is placed between the dead-house and the privy, but nearer to the latter than the former. It is built on the old plan, and has no chimney.

35. The *female hospital* stands behind the north-east corner of the male hospital. Its aspect is about west by south. It has a plinth 2¾ feet high, and an open veranda nine feet wide on one side only. The main room is 33½ feet by 22 feet, and its walls are 12 feet high. On one side there are four windows 3½ feet wide, and on the other three windows and a door. There is a ridge ventilator 10 feet long, with louvre sides. The piers between the side openings are only 4¼ feet running measurement, which is inconveniently small for a cot. At one end there is a doorway 4½ feet by 7 feet, and at the other there are two smaller doors that open into two wards, one 13¾ feet by 10½ feet, the other 10½ feet by 7½ feet, under the slope of the roof. Under the slope of the roof at the other end of the building there are two small rooms, 8 feet by 6½ feet, without fittings. There are a detached privy, a cook-house, and matron's quarters.

36. The middle unoccupied hospital building, with the west by south aspect, closely resembles the male artillery hospital which has been described. It also has a lavatory of like dimensions, built against its enclosed back veranda. Its privy is detached in rear of the lavatory, and communicates with the hospital by means of a long covered passage. The

plan of the privy is very bad, there being a sloping pavement under the seats, on which soil-vessels would not rest.

37. At the inspection there were only three men in hospital. The total strength of the detachment was 42 non-commissioned rank and file, and four women and five children. Since the outbreak of cholera last year the artillery force has been only one division of a battery, and it has been relieved monthly.

38. Baroda has always been a station at which there has been much sickness among European troops, and the mortality in some years has been exceedingly great from various causes, but in 1859 and 1865 it was mostly by heat apoplexy and by cholera. Last year cholera had been for some time prevalent in the neighbouring city before it appeared in the cantonment. The irregular occupation of the ground in rear of the Sudur bazaar, and of the ruinous huts between the hospital and the horse lines, greatly increases the liability to the spreading of epidemic sickness from the town to the troops.

39. It is desirable that no more European soldiers than are absolutely required should be stationed at Baroda; and it is highly desirable that those whom it is necessary to locate there should have all the advantages as to barrack and hospital accommodation that the lately-devised improvements can afford.

40. The drinking-water was from wells—one only 60 feet from the nearest barrack, and one but 30 feet distant; another of the wells was close to the hospital edge. Samples drawn from these wells, in May 1865 were examined, and found to contain nitrates, indicating long continued infiltration of impurities, and also a considerable quantity of recent organic matter, as was expected, because earth is well known to have only a limited power as a purifying filter, and to allow of organic matters being carried down from the surface of the ground by the rain that feeds the well.

Recommendations.

(1.) That upper-floor barracks be built, as early as practicable, for the accommodation of the European soldiers whom it may be found indispensably necessary to keep at Baroda.

(2.) That the barracks be built with a south-west aspect.

(3.) The best site for a barrack, to accommodate a detachment of the present strength, appears to be that of the now unoccupied left front barrack on a high plinth. The new building would have to be placed across the line of the present barrack. The trees that are at a short distance to the westward of the site should not be cut down, as they would in some measure lessen the driving of the dust blown along the ground in the hot season, and would afford a desirable shade, while they would not be high enough to interfere with the access of the breeze to the dormitory-rooms.

(4.) Were there any impediment to the speedy construction of a new barrack, and a necessity for the continued occupation of the barrack now in use, it would be desirable that it should at once have glazed windows. The coffee-shop should be removed, and proper serjeants'-rooms should be partitioned off.

(5.) A day-room should be made by partitioning the nearest unoccupied barrack, and connecting it with the present dormitory, by a covered passage. Recreation-rooms or appliances should be provided according to regulation.

(6.) The lavatory should be completed with a raised cistern, from which fixed basins might be supplied with water by gravitation. The basins should have supply, overflow, and waste pipes. Two screened compartments should be made at one end of the room, with shower baths and the appliances for private ablution, that have been described in other inspection reports. The windows should be fitted with glazed casements.

(7.) The waste water of the lavatory and baths should be drained off by pipe to a distance, either to be utilised in gardening, or to be absorbed in the ground, where it would not be hurtful.

(8.) A covered passage from the barracks to the lavatory should be constructed.

(9.) The latrine should be completed with properly fitted soil-vessels, and each seat should have a diagonally-placed screen.

(10.) Urinaries of temporary construction, with bamboo walls, and with covered passages, should be placed near the barrack.

(11.) The cook-room should be improved by the construction of a domed fireplace with a chimney, and a raised sink in the veranda. The floor should bepaved with stone.

(12.) The canteen floor should be repaired. The coffee-room should not be under the same roof with the liquor-room.

(13.) A separate refreshment and coffee room should be given. Accommodation might be found in a part of the barrack used as a theatre and lecture-room, or in that now proposed to have a day-room in it.

(14.) The aspect of the quarterguard cannot be altered, and, even if the other defects were remedied, the building would not, owing to that fault, be satisfactory. The defects that require to be rectified are the lowness of the plinth and walls; the former should be three feet high, the latter the standard height. There should be a continuous roof ventilator,

tilator, with sufficient overlap to prevent indrifting of rain. There should be a 10 feet wide veranda, and, above it, clerestory ventilators, with glazed revolving shutters, to exclude dust and rain; the windows should be glazed. The lock-up, which is at present unventilated, and under the slope of the roof, should have height of walls and ventilation equal to what are recommended for the guard-room. A better site for the guard-room would be found to the westward of the proposed new barrack.

(15.) With a new guard-room, new cells should be built according to the standard plan, and proportioned to the strength that is fixed for the detachment, but all should at this station have a three feet high plinth. Until new cells can be built, the present ones should be enlarged by removing partitions, so as to convert two into one. The guard-room should have a bamboo-walled urinary, with a regulation pail, instead of the masonry urinal.

(16.) New family quarters are urgently required; the present are not capable of sufficient improvement to fit them for habitation. The new quarters should have plinths at least three feet high, with ample opening between the front and back rooms, to allow of free perflation. The edge of the veranda should be railed for safety. The new buildings might be placed where the most westerly of the old barracks now stands, if it were removed, otherwise immediately to the west of it.

(17.) The hospital used by the artillery is inferior in aspect to the middle building, which is vacant. It is very necessary that the European sick should be accommodated on an upper floor, and it is recommended that an upper floor should be added on the centre building for them, with accommodation in proportion to the strength of the detachment. There should be a wide veranda to it, to give protection from the sun's rays, free roof ventilation, and all the other arrangements that are ordered for the most recent hospitals, and of which the converted building may be capable.

(18.) If the building which has been mentioned be found unfit to be thus altered, a new hospital should be constructed; and in that case a better site than the present might be found, farther from the river.

(19.) The present hospital, while used as such by European soldiers, should have glazed windows for its wards, and for the dispensary and surgery; the last should have a large glazed casement in its north side. Each of those rooms should be ventilated into the veranda by large openings.

(20.) The lavatory of the hospital should have its masonry bench for basins reduced to 2¼ feet. There should be a screened compartment made for a shower and for a tub bath. A raised reservoir should supply these and the basins by gravitation. The waste water should be drained off by pipes, as recommended for the barrack lavatory.

(21.) The hospital privy should be fitted with glazed soilpans, in seats partitioned and screened. It should have glazed windows to light it, and it should have roof ventilation. It should be paved with stone.

(22.) The cook-house should be provided with a chimney. It should be paved with stone.

(23.) The dead-house should be removed from its position close to the hospital, and should be reconstructed on an improved plan, to the eastward of the privy, if the strength of the detachment is to be larger than it is at present.

(24.) With the detachment so small as it is now, it would not be necessary to alter the female hospital; but should a large force be at the station, the partition between the two end rooms should be removed, to convert them into one ward. A veranda should be added to the back of the building, and two of the four windows on that side should be converted into doors. One of the three windows in the front of the ward should be converted into a door. The enlarged end ward should have doors opened into the front and back verandas, and should have large ventilating openings high in the walls, communicating with the veranda.

(25.) The extension of the Sudur and other bazaars should be discouraged, and squatters and unauthorised occupiers of huts and sheds should be at once removed from the cantonment. The remaining huts of the old Native infantry lines, to the windward of the barracks, and occupied by commissariat cattle, should be removed.

(26.) All the huts near the hospital should be removed, and no followers or others should be permitted to remain in its neighbourhood, excepting those belonging to the regular establishment, and they should be provided with quarters built according to regulation.

(27.) Water should be obtained by wells sunk at a distance from habitations, because experience proves that earth allows organic impurities that fall on the ground to pass into wells along with the water that filters through it.

(signed) *A. H. Leith*, M. D.,
Deputy Inspector General of Hospitals,
President, Sanitary Commission.

Poona, 18 June 1866.

REPORTS on the CANTONMENT and MILITARY BUILDINGS at KURACHEE.
(Inspected in December 1866.)

PRESENT:

A. H. Leith, M.D., President.
Gordon Asher, M.D., Member and Secretary.

CANTONMENT at KURACHEE.

KURACHEE, at the south-west extremity of the Sind division of the army, has its communication with Bombay by sea, the distance being about 520 miles. It is connected with Hyderabad by a railway to Kotree, on the opposite or right bank of the river, and thence the communication with Upper Sind and the Punjab is chiefly by the river Indus. The garrison of Kurachee consists of a regiment of British infantry, a light field battery, and the head-quarters of a brigade of artillery, and a Native infantry regiment. There is a depôt for troops arriving for and departing from Sind, and some of the Punjab stations, and at the close of the year the number attached to it is very large. Close to Kurachee there is the Sea Coast Sanitarium of Gizree, which it is proposed shall have accommodation for 200 men.

2. The Kurachee cantonment was originally larger than it is now, and it was included in one continuous boundary line. An error, which has been too common elsewhere, was committed in laying out this cantonment. There ought to have been secured between the men's barracks or lines and the town an interval on which no buildings might be erected, and which might be always maintained to preserve the soldiery from sharing in the communicable diseases that are fostered and propagated in the unclean dwellings of the poorer of the native population. But instead of thus providing by isolation for the protection of the troops from epidemic diseases, the Sudur bazaar was wrongly placed, not only too close to the men's lines and to the windward, instead of the leeward, as regards the prevailing wind, but also between them and the native town, thus helping to bridge over the interval that ought to have been kept clear.

3. From the time of the occupation of the country after its conquest, the whole of the land between the old town of Kurachee and the military lines was made available for building, and it was indeed only in that direction that the town could well be extended to meet the wants of the rapidly increasing mercantile population. It is to be regretted that, with such an extension in prospect, the welfare of the cantonment was not better provided for.

4. The Sudur bazaar rapidly grew to be a little town within the cantonment, with a population having no essential connection with the troops, but still under military rule, until the year 1862, when it, with a considerable portion of land, partly built on, and partly still unoccupied, was transferred to the municipality of Kurachee with the expressed intention of affording greater inducement to its being more fully built over.

5. By that transfer, the cantonment has been irregularly divided, and the artillery are now separated from the rest of the troops. The intermingling of military and civil boundaries, and the fact that the followers who hang about every cantonment, offering temptations to immorality, are here beyond military control, although in the immediate neighbourhood of the soldiery, give rise to dissatisfaction and misunderstandings.

6. Were it practicable to remove the Sudur bazaar, it should be done, but the re-acquisition by Government of the ground which has become the property of private individuals, and now bears a high market value, and is covered with streets of substantial, spacious, and expensively built houses, is what cannot be contemplated. Such a purchase would cost more than would the removal of the cantonment, for the purpose of isolation, to any required distance.

7. On a close inspection of the Sudur bazaar, and what is called the soldiers' bazaar, at the north end or right flank of the cantonment, they were found to contrast not unfavourably, as to conservancy administration, with what was seen within military limits. The scavenging and the sweepers' work, and even the use of lime as a deodorant, were well carried out. There are indeed grievous evils, that have been continued from the time that the bazaars were under military rule, and that seriously endanger the lives of the community by giving virulence to any epidemic disease. Such are the nearly universal use of cesspits, and the overcrowding that there is, both from houses being raised to an undue height, with reference to the width of the streets, by the addition of upper floors, and from the houses being subdivided for the occupation of a greater number of families and individuals than their size and ventilation safely admit. At present, the cantonment and municipal law are equally impotent to remedy the evils. In the new Cantonment Act, which has been drafted, power is given to deal with such nuisances, and to abate the immoralities that are complained of, but it is doubtful if it will provide sufficient funds to bear the expense of a thorough system of conservancy, such as the municipality

municipality is willing to carry out. There is a new Municipal Act in course of preparation, and it might be made, as regards nuisances, equally comprehensive with the proposed Cantonment Act. If the new municipal law gives the power for good that is now wanting, and if the conservancy administration continues as energetic as it now is, there does not appear to be reason to think that the welfare of the troops will be compromised by allowing the Sudur bazaar to remain under the control of the municipality.

8. The soldiers' bazaar is an isolated village of long parallel rows of mud-built huts and ill-constructed low houses, with floors on the same level with, or even below the level of the surrounding ground. The streets are unmade and uneven. The row of houses next to the military lines is in great part occupied by dairymen, whose cattle are generally picketed in the open air, but are in some instances kept in the unpaved enclosures of their houses. The northern line of huts is mostly inhabited by petty shopkeepers, while the intermediate part of the village is occupied by prostitutes. Cesspits are here also in extensive use, and the ground exhales an offensive odour because of them. To render this village wholesome, it should be rebuilt, but it would be better were it removed. It gives more ground for complaint than the Sudur bazaar.

9. The bakery of the contractor for bread to the troops was inspected; it is in the Sudur bazaar. The wheat is first imperfectly ground by mills driven by camels, in low confined hovels in a small yard, made most offensive by those animals being kept in it. The crushed grain is then carried in carts, open to dust and all impurities that may fall on it, to the bakery in another street, and is there sifted. What has been insufficiently crushed is sent back to the camel-mills, and after further grinding is carried again, still exposed in the open cart, to the bakery in Malvery-street. The meal is then ground to the form of *soojee* by hand-mills in a small room, where the atmosphere was most offensive owing to the unwashed condition of the bodies of the men at work. From the hand-mills the *soojee* is transferred to women to be sifted. They sat in a room that had a floor-cloth, but they were in their ordinary unclean clothing, and the *soojee* or flour fell beside, or even upon their bare legs and unwashed feet. A kneading machine was on the premises, but its use had been discontinued, because it was said it did not answer. The machine appeared too ponderous to be efficiently worked by hand. The kneading was still performed by hand.

10. *Garrison Cells.*—They are in a yard enclosed with a low wall: they are six in number, and are arranged in a rear block of three cells and a front row of three separate cells; they are built of stone and lime, on a plinth two feet high. The roof is flat, the floor of the cell is paved, and that of the veranda is earthen. The veranda is $8\frac{1}{2}$ feet wide, and is tiled. In front there is a double door, the inner one barred, the outer plank, the arch-head is barred. There is a barred clerestory opening, and on the level of the floor, two openings of the shafts of the small wind-towers in the roof. In rear there is a window three feet from the floor, three feet by two feet, barred, and with a wooden shutter opening inwards; there is a higher barred window, and in the wall at different heights there are openings for ventilation, the lowest of those openings being $7\frac{3}{4}$ feet from the floor. The dimensions of the cells are 12 feet by 12 feet by 15 feet 9 inches.

11. In rear of the cells there are a privy and a lavatory.

12. Very near the enclosure of the cells there is a bungalow, which has become the property, it is said, of some private individual who does not belong to the garrison.

It is recommended that—

(*a*) In the Sudur bazaar, soldiers' bazaar, and civil lines, the use of cesspits be discontinued, such legal power to enforce this as is wanted being obtained; that it be obligatory to use soil-vessels in all privies; and that a sufficient number of tank carts visit daily, at appointed and suitable hours, all the streets, to remove the filth.

(*b*) That the height to which the walls of houses may be carried in existing streets be limited to two-thirds of their width, and that in all new streets their height be not more than half the width of the street. That the number of inhabitants in a house be in accordance with its size.

(*c*) That the soldiers' bazaar, if practicable, be removed. If impracticable, then that all decayed houses be removed, and all reconstructions be on plinths raised at least two feet above the level of the street. That the streets be made.

(*d*) That a steam bakery, under the direct management of the Commissariat Department, be substituted for the present bakery.

(*e*) In the garrison, as in all cells for convicted prisoners, bars, to which ligatures might be attached, should not be within reach at times when the prisoners are unwatched. The window therefore should be high enough to be beyond reach, and the barred door should be outside, not inside, of the plank door. A massive wooden sleeping bench should be firmly built into the masonry.

(*f*) It appears advisable that an unmilitary and private proprietary should not be allowed to be established in the neighbourhood of the cells.

ARTILLERY OR SOMERSET BARRACKS.

THE artillery lines are on the west side of the cantonment, and are separated from the rest of it by private dwellings and the Sudur bazaar, which are under the rule of the municipality of Kurachee. These lines, together with the arsenal and magazine, occupy an isolated spot of about 190 acres. On the north there are two old excavations, which are now pools or unbuilt tanks, which are empty in the hot season. The nearest is about 300 yards from the barracks; they are called the Ruttun *Tulao*. On the south of the barracks, at a distance of about 80 yards and within the military limits, there is a small watercourse, with uneven gravelly banks and a pebbly bottom, which carries off the storm waters that flow through the Sudur bazaar, but at other times is dry. Another and even smaller watercourse carries the surface drainage during rain in a westward direction from close in front of the family quarters and the horse lines. With these exceptions the ground is apparently even, but water is apt to lodge behind the barracks and at the south end of the hospital, and there are no trenches to carry it off.

2. The men's barracks stand nearly in the middle of the ground, and to the south and the west there is an open plain, unoccupied except by the huts of the Tent Lascars and their latrine (which is complained of); the overcrowded lines of the grass-cutters and the artificers of the arsenal have lately been removed. On the north-east there are the horse lines about 70 yards, the sick horses' stable only 18 yards, and the arsenal and barrack-stores about 170 yards distant. Eastward there are the subsidiary buildings, and on the south-east there are the officers' quarters.

3. *The Barracks* are three in number, and are built, after designs approved in 1847, of stone and lime mortar. They are in line, with intervals of 71½ feet, and have an aspect nearly W. S. W. They have two floors, with a plinth originally two feet high, but now in some parts less, apparently from the accumulation of sand. The roof has but little pitch, and has only a single layer of tiles over a layer of clay mixed with chopped straw, such as is in general use at this station, and there is no ceiling with it.

4. The three barracks differ a little. Those on the flanks have pent tiled roofs over the 12½-feet-wide verandas of the lower floors; the centre barrack veranda has a flat roof, which forms a terrace, laid with pantiles, for those occupying the upper floor.

5. The measurements of the dormitories or upper rooms differ; in the right-flank barrack they are 135 feet by 24 feet, with a height of wall 13½ feet; the centre barrack is 135 feet by 24 feet and 15 feet; and the left flank one is 136 feet by 25¼ feet by 15¾ feet.

6. The side openings are all windows, 4 ft. 10 in. by 3 ft. 9 in. in the clear of the frame, and with the sill from 3 ft. 10 in. to 4 ft. 4 in. high. The windows have the lower two-thirds closed with pannel shutters, and the upper third with a glazed frame revolving on a horizontal axis. There are fixed glazed fanlights. The piers between the windows in the two right barrack are 10 feet broad, and in the left flank barrack, owing to a difference in the splay of the windows, they are 10 ft. 9 in. From the centre of one window to the centre of the next the measurement in all is 15 feet. The wall in the corners has a running measurement of 7 ft. 9 in. One corner at each end of the dormitory is not available for a cot, owing to its being occupied with the entrance door. Besides the ventilation that is dependent on the doors and windows being open, there is none.

7. The floors are of plank, and the leaking of the seams causes inconvenience on the lower floor.

8. The access to the upper floor is by a stair at each end veranda, it is only 4½ feet wide, and in two barracks is of wood, and in the left flank barrack it is of stone, and in this the steps are much worn and very uneven. The stair rises through the pent roofs of the tiled verandas, and in all the barracks it is much exposed to the weather. There is no veranda to shade the walls of the upper floors, and there are not even weather-screens for the windows.

9. There are nine windows on each side of the dormitories, and therefore eight piers from 10 ft. to 10 ft. 9 in., against which two cots may be placed with the regulated 7½ running feet for each, and there are two corner places, one side available, in each of which one cot may be placed. Although the wall measurement of the corner, being 7 ft. 9 in., is in excess of what is required for one cot, yet it would not be allowable to place two cots in a corner where the occupant of one, besides being too near the occupant of the other, would have to breathe the air which had been vitiated by him.

10. Each room has wall linear, and floor surface measurement sufficient for 36 men, but, owing to the deficient height of the walls, the cubage of air that each would have is only 1,215, 1,350, or 1,502, varrying with the barrack occupied by him. The arrangement of the windows would not admit of the regulation allowance of 1,800 cubic feet being given to a man, unless he were to occupy the excessive amount of 15 linear feet, which a whole pier and a window measure, that is, the allowance of two men. The best way in which the deficiency can be supplied is by heightening the walls, and this will be necessary in

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in order to give slope to the roof of the veranda which should be added to the upper floor.

11. There is a dormitory accommodation in the three barracks for only 108 rank and file. The number of unmarried men to be accommodated, in a field battery, is 132. There is thus a deficiency of room for 24 cots for the battery alone; this, however, is the head-quarters of a brigade, and there are the bandsmen and others that have to be provided for.

12. The accommodation for serjeants is so exceedingly bad that it cannot be occupied by them; it is on the ground-floor, where at each end of the building there are two serjeants' rooms, each with a floor 11 by 11 ft. and a height of 18 ft., with one doorway, 2 ft. 10 in. wide, without a door, open to what formerly was the lower barrack-room, a window towards the side veranda 4 ft. by 5 ft., and another 3 ft. by 5 ft. 8 in. towards the staircase in the end veranda. A convicted prisoner, in a solitary cell, has more space and better ventilation.

13. The serjeants sleep, at present, together in a screened-off portion of the lower barrack-room.

14. The men of the band sleep in a portion of the lower floor of the right division barrack; the number of occupants the night before the inspection was 15; the other half of the room is used for the harness, until the new harness-rooms, now in progress, are ready.

15. The lower floor of the centre barrack is occupied in part by the school for adults, which is attended by so many as 60 men, and partly by the serjeants' mess. The ground-floor of the left flank barrack is divided into a domitory for serjeants, a coffee-room, and a library. The library and reading-room is much frequented, and, although half of the lower accommodation is given to it, there is complaint of its being too small. There are the usual indoor games provided, and numerous periodicals are on the table.

16. There are at present no dining or day-rooms. The men take their meals in the veranda on the lower floor.

17. The *Lavatories* are being altered; they are detached in rear of the barracks. There is a centre room, in which a stone bench for basins is being made at each side; it is very insufficiently lighted. At the end there is a very large cistern for water, which is not sufficiently elevated to supply baths by gravitation. On each side of the centre room there is a wing, in which there are two bath-rooms, and an urinary, which is to be converted into a room for private ablution, while detached urinaries, with bamboo-walls are to be provided. The bath-rooms are lighted with a glazed window on the east side, and each has a door; there is not as yet any bath or shower-bath provided. There is a cesspool in rear for the waste water, which has daily to be removed from it.

18. The *Plunge-bath* is on the right front, in a line with the staff serjeants' quarters; it is constructed above the level of the ground; its greatest depth is 5½ feet; it has steps at one end; the bath is 35 ft. 8 in. by 13 ft. 9 in., and on three sides it has a path, only 1½ feet wide, on which it would be impossible for two men to pass. The wall above this path is 8 ft. 9 in. high, and in it there are unglazed segmental openings. The roof is tiled, and has a small ridge-ventilator, which is unprotected against the admission of sparrows, and they are troublesome from building and scattering the material of their nests. At one end there are some foot-baths hollowed in blocks of stone. There is a stone bench, too high to be used conveniently as a seat. There are no pegs for hanging clothes or towels. There is no urinary. The waste water is drained to the watercourse on the south-west.

19. The bath room is supplied with brackish water from a well close by, and in which there is a rise and fall corresponding with the tide of the sea, and, when the tides are low, a sufficiency of water is not procurable. The last filling of the bath occupied seven days.

20. The men frequent the bath very much in the hot season, and it is said there is no need for bathing parades.

21. There are two *cook-houses* in rear of the barracks, built according to the old design, and very smoky. There is not a room for the cooks. The dresser and block were in use.

22. The *latrines* in rear of the barracks have been recently improved, and they now have wooden partitions and doors. The seats are according to the standard plan, excepting that the pans are not close enough to the underside of the seat plank, and the arch in rear of the seat has not yet been closed with a board.

23. In rear of the centre barrack there are, under construction, three harness rooms, and the outer two have workshops built against them, back to back, instead of end to end, so that the ventilation cannot but be most imperfect. There are gables facing the west and east, with small entrance doors and semicircular openings in the wall. The work is far advanced, but the defect may yet be in some measure remedied by increasing the size of the openings in the gables.

24. The *canteen* is a centre room in a building in front of the barracks, in a line with the

the staff serjeants' quarters. It is 20 feet by 18 feet, and is not furnished. The floor is of concrete, aud is much broken and very dusty. There are clerestory, but no roof, ventilators.

25. One end room is the liquor store, in the other the collar-makers have their workshop at present.

26. *Staff Serjeants' Quarters.*—In a building in front of the left barrack there are accommodated the brigade serjeant major and the schoolmaster. The building has a two-feet-high plinth, an earthen floor, and an open veranda eight feet wide. A partition divides the portions of the veranda that belong to two occupants. Each has two rooms, respectively 18 feet by 18 feet and 18 feet by 10 feet, and in height 17½ feet. The ceiling is of cloth. There are clerestory windows. The rear corners of the veranda are enclosed to make bath-rooms and privies. There are separate cook-rooms. The accommodation is inferior in extent to what is allowed in the standard plan, and the ground floor dormitory, with its low plinth, is unhealthy. The serjeant major and one of his children were ill with fever at the time of the inspection.

27. Two *Battery Staff Serjeants* and the *brigade trumpet major* occupy a building in front of the right barrack. The building has two floors, and the lower has a very narrow, open veranda on the west; on the east and at the ends it is enclosed. The three quarters are separated by partitions in the veranda, and each consists of a lower room 16 feet by 16 feet and 12 feet high, and an upper room of the same surface measurement. There is neither veranda nor weather-shade to the windows of the upper rooms. The access to the upper floor is by stairs in the lower rooms, rising through the ceiling above. The upper rooms of the centre quarters have two windows in front and two in rear; the end rooms have in addition an end window; below, half glazed doors take the place of windows, and there are no other means of ventilation. Each family has a detached lavatory and cook-house. Water was lying in pools beside them.

28. The *quarter-guard* is far detached at the left rear of the barracks. It is a building on a two-feet-high plinth, with an open veranda, which, like the room within, has an earthen floor. The floor surface of the room is 23 feet by 18 feet, and the height of wall is 15¼ feet. Two sides have each two glazed windows, 3½ feet by 5 feet clear of the frame, with their sills 3½ feet from the ground; on a third side there are a door and a window; in the remaining side there are doors opening into detention-cells. The position of the windows and doors is not favourable to the proper placing of the cots; two piers are each 7½ feet broad and a third is 4¼ feet. The corners have but small extent of wall, and they cannot be occupied on account of the doors of the detention rooms on one side, and on the other on account of windows limiting the available room. The guard is five in strength, and gives one sentry, leaving four to occupy the room. There is neither roof nor clerestory ventilation.

29. *Detention Cells.*—As before mentioned, they open into the guard-room. Each is 11 feet by 11 feet, and has a height of 15¼ feet. There are a plank and a barred door to each, and two large, barred, clerestory openings, and, close under them, smaller ventilators opening into the veranda. There are besides, two barred windows with low sills, and now closed with perforated metal plate. The present too free communication that there is between the prisoners and the guard is objected to by the commanding officer. The guardroom has a detached privy.

30. The *solitary cells* are two in number, under one roof. Their dimensions are 10 feet by 10 feet by 16 feet high. There are a plank and a barred door. There is a ridge ventilator, a barred window high in the wall, and level with the ground; on the east side, two large barred ventilators. The cells are two small, and the ventilation is faulty. They are rarely used, as convicted prisoners are confined in the garrison cells.

31. The *schoolroom* is in a building standing end to the wind, and which was originally divided into four rooms. By opening a large arch in the partition, the two middle rooms were made into one, which is now used as a schoolroom for children. The plinth is two feet high, the floors earthen. The doors are half glazed, and have over them glazed revolving frames. There are clerestory glazed ventilators; no roof ventilation. The end rooms are occupied as office and orderly room.

32. *Family Quarters.*—They are in one continuous block of 15, far in rear of the unmarried men's barracks. The number of quarters is under the established proportion. They face the W.S.W. They are built of sun-dried bricks and are tiled. They have a plinth about one foot high. In front and at the ends the seven-feet-wide veranda is enclosed with trellis. The eaves are 7 ft. 4 in. high. Each family has a front room, with floor surface 17 feet by 15 feet and with height 12½ feet, and a back room 13¾ by 6½ by 9 feet, intended to be used as a bedroom, but which cannot be so occupied. The rooms communicate by two high open archways, respectively 3 feet and 2 ft. 8 in. wide, one open to the floor level, the other with a sill about four feet high. In the west or front there is a door 6½ ft. 2 in. by 2 ft. 8 in. clear of the frame, and a window 2 ft. 6 in. by 2 ft. 4 in. The back room has similar door and window. The only ventilator is an opening on the eastern slope of the roof, made by raising a portion of the roof.

33. Each family had standing in rear a building comprising a cook-room, a bathing-room, and

and formerly a privy, but lately a partition has been thrown down to enlarge the lavatory. There have been finished a common privy for men at some distance from one rear angle of the block of quarters, and one for women at a corresponding distance from the other rear angle, and the construction of one for children has been begun opposite the middle of the block. The distance that those at the further ends of the range of quarters will have to go to the privy is by far too great, especially in case of sickness. The providing a separate privy for children is very unusual, and is not judicious. It is advisable that the partition be restored, so that each family may again have its privy near at hand.

34. The tiled *stable sheds* have open sides, yet the want of roof ventilation is complained of by the commanding officer. In one of the sheds some very small holes have been pierced in the ridge, but they are altogether insufficient as outlets for the heated and vitiated air that collects in the pent of the roof.

35. The means of out-door amusement that have been provided for the men are a double fives-court, an American bowling-alley, a skittle-alley, and cricket-ground.

36. The *hospital*, with its subsidiary buildings, stands at the eastern part of the lines, and is enclosed in rear and at the sides with a low wall and railing. The building has the same aspect as the barracks. It is on a plinth two feet high, is of stone and lime-mortar, and is tiled. It has a double veranda, the eaves dipping to 8 ft. 8 in. The outer veranda is seven feet wide, and is open, the inner is 12 feet wide, and is enclosed. It has seven pannelled doors, seven feet high, with glazed frames, 1½ feet high, over them, and made to revolve on a horizontal axis. Above these there are clerestory glazed ventilators.

37. The ward is 79 feet by 24 feet, and is 24 feet high; it communicates with the inner veranda, in front and in rear, by seven archways, reaching upwards to 15 ft. 8 in. from the ground, and 4 ft. 2 in. wide. Two of these are continued downwards to the floor, the others only to within three feet of the floor. The sides of the arches are splayed inwards, and the piers between the splays are six feet broad, the arches at the splays 5 ft. 6 in. wide. The linear measurement of the wall in the corners is 3 ft. 7 in. These corners will allow a cot to stand in each, although with but scanty room, and a cot can be placed against each pier. Thus accommodation can be given to 16 cots, which is about the number that the field battery with the head quarters and band of the brigade requires.

38. The *Hospital Lavatory* is an enclosed portion of the rear outer veranda, badly lighted by a window whose sill is nine feet high. It has a stone bench, with moveable basins. It has not a foot-grating, but one, it is said, is being made. There is a scuttle-butt with the supply of water. There is a shower-bath, with a stone stair outside, to allow of its being filled, but it is never used. There is a slipper-bath. The floor of the lavatory was wet.

39. The *Hospital Cook-room* is after the old design, without chimney. The fire range is too extensive, but there is no boiler. There are large openings for light and air, but unglazed and unbarred. The cooks sleep in the cook-room to guard the utensils, as there was recently a robbery by entry through the unprotected openings. It was found at the inspection that the liquid refuse was thrown out on the ground instead of being carried away. The evil of this was pointed out.

40. *Hospital Latrine.*—This is 30 feet in rear of the hospital, and is connected to it by a covered passage, with a continuous roof. The building appears to have been both a lavatory and a privy; now, one-half of it is used for the latter purpose. The seats have recently been altered for the use of dry earth, but they are left without partitions and doors. The tops of the arches behind the seats have not yet been closed. There is a window behind the seats, or to eastward, which is barred, but it has neither glass nor shutter. The other openings are on the west side towards the hospital, and the easterly wind that blows at this season carries the effluvia into the ward. There is no ridge-ventilator.

41. The *Dead-room* is at the same distance in rear of the hospital as the privy, and, with it and the cook-room of the male hospital, and one intended for the female hospital, forms a line of building which must seriously obstruct the perflation of the hospital. The dead-room floor has a very badly-laid pavement.

42. A foundation was seen to be marked out for a temporary unirary in a line with the buildings now mentioned, and tending to increase the obstruction. Another site, at the south-east corner of the hospital, was pointed out as more appropriate.

43. The veranda at the south of end of the male hospital is enclosed as a surgery and dispensary. That at the north end is enclosed, and cut off from the male hospital, and is used as a *Female Hospital.* The ward is 11 ft. 10 in. wide, and 38 feet long, and has doors and clerestory openings towards the north, and one towards the west. At the east end there is a closet, 9 ft. 10 in. by 9 ft. 10 in. that is said to be a parturition ward. Beyond it the outer veranda is enclosed as a bath-room and privy. The accommodation is altogether unfit for a female hospital.

44. To the north of the hospital, and between it and the married men's quarters, there is a large building of stone and lime-mortar, on a two-feet-high plinth, with an open veranda, nine feet wide, with earthen floor all around it. It is divided by a partition, reaching to

the tie-beam, into two rooms that are paved, one 45 feet by 22 feet, and in height 19 ft. 8 in. On each side there is one pannelled door, 7 feet by 3 ½ feet, and three windows, 3 feet by 4 feet. The arch-heads are built up. Over the doors and windows there are glazed clerestory ventilators; at the south end also there is a door. The piers between the side openings respectively are 6 ½ feet, 7 feet, and 7 feet broad. The wall in the corners is insufficient to allow of cots being placed in them. The other room is 37 feet by 22 feet, and has on each side one door and two windows; it is at present used as a ward for sick Native followers. It appears desirable that this building should be used for the female sick, instead of the very unfit veranda of the male hospital.

45. At the inspection there were several inmates in the native ward, and part of them were lying on the stone floor, without sufficient bedding to prevent their being injuriously chilled by their contact with such a floor. The medical officer said that no bedding was allowed for followers in hospital, and that often they had not sufficient of their own.

46. It is the intention of Government to benefit the followers by allowing them to be treated in hospital, and it cannot be that what is absolutely necessary for their welfare should be denied them on proper representation, and this was stated to the medical officer, who himself was anxious to provide better for those under his care. If the wants in this respect of the necessitous among the sick followers cannot be met, then it is very questionable whether it is advisable to remove them in cold weather from their huts, where they have their bed on the comparatively non-conducting earthen floor, to an hospital where they must lie on the stone floor, or an iron cot.

47. At the time of the inspection there were seven sick in the male hospital and none in the female ward. The sickness from 1st January to the 20th December, or nearly a year, has been 246 admissions: from fever, 43; dysentery and diarrhœa, 19; hepatic disease, 8; venereal, 21; and other causes, 155. There has been no death.

48. Drinking water for the hospital and barracks is brought in casks from the commissariat well. It has been analysed, and found to contain a variable, but large, quantity of saline matter, chiefly alkaline salts, and very little organic matter. The water obtained from wells in the neighbourhood of the lines is not considered fit for man to drink, on account of the large amount of its saline contents; it is used, however, for ablution, and the horses of the battery are watered at a well beside the Rutton *tulao*.

Recommendations.

(*a.*) An additional barrack should be built to acommodate the 24 men of the battery at present unprovided for, and also the bandsmen and others of the head quarters of the brigade. The barrack should be according to the most recently approved plan.

(*b.*) The present barracks should be improved by raising the wall of the upper rooms to a height of 20 feet; adding 12 feet wide verandahs to the upper floors, and improving the staircases by widening and sheltering them; giving continuous ridge ventilators for the roofs, and plank-covered ceilings to the upper rooms, with sufficient ventilating apertures; providing clerestory ventilators with glazed frames, well protected from the weather by sufficient projection of the eaves; converting the existing windows into half-glazed doors, to open on the proposed verandas, and making all the glazed fan-lights to open and shut by revolving on a vertical axis. The floors should be well caulked.

(*c.*) Half of the lower floor of each of the existing barracks should be given as day accommodation for the men. This might be effected when the serjeants and bandsmen have new dormitories, by removing the coffee and refreshment room and the library, which now is not large enough, to a new building which should be erected for them in a central position in rear of the barracks. One of the iron-frame temporary barracks, of which the material is believed to be in the arsenal, might be converted to this purpose.

(*d.*) The *lavatories* of the barracks should be assimilated as much as possible with the pan which has been already submitted to Government for approval, and should have raised cisterns to supply the hand basins and shower baths by gravitation. They should be lighted with glazed windows, and the waste water should be conveyed by pipe drain to a distance, to be utilized, or to be absorbed in the gravel in the bank of a watercourse.

(*e.*) The *plunge-bath* cannot now, it is apprehended, have the path on its margin made wider. It should have glazed windows to protect the men from the direct draught of the cold easterly wind. The ridge ventilator should be defended against the ingress of birds by wire netting. Instead of the too high stone bench, there should be fixed substantial wooden benches, 18 inches high, for the men to sit on. There should be pegs on which to hang clothes and towels. And there should be an urinary, of the ordinary temporary construction, near the door, and with a covered and screened passage to it. A more certain and abundant supply of water should be provided for the bath.

(*f.*) The *cook-houses* of the barracks should be altered, according to the plan that has recently been submitted for the approval of Government.

(*g.*) The *latrines* of the barracks should have the seats completed, in accordance with the plan which has lately been issued for guidance.

(*h.*) The *Workshops.*—The evil attendant on the faulty position of the new workshops should

should be lessened by opening at each end, for perflation by the breeze, an arch eight feet wide and nine or ten feet high, and forming the existing half circle into a circular opening high in the gable, and defending it from indrift of rain. The large eight-feet-wide door will require to be protected by a porch.

(*i.*) The *canteen* should have its floor paved. There should be continuous ridge-ventilation.

(*j.*) An upper floor, with a veranda, should be raised on the brigade staff serjeants' quarters, to afford them the additional accommodation they should have, and also more wholesome dormitories. If, by extension of the building, the brigade trumpet major could have appropriate quarters, this should be done.

(*k.*) The battery staff serjeants should have their accommodation improved by increasing the width of the veranda, adding a veranda to the upper floor for protection of the walls and windows from the sun-heat, and by removing the stair from the inside of the room to the eastern proposed veranda.

(*l.*) The faulty position of the windows of the guard-room cannot be altered, but two corners may be made available for cots by building up the doorways of the detention-cells that now open into the guard-room, and making doors for them in the veranda.

(*m.*) If *solitary cells* are required, they should be rebuilt according to the standard plan.

(*n.*) The ventilation of the schoolroom and the adjoining offices should be improved by a continuous ridge-ventilator. If the room in the west end of the building could be spared, a wide archway should be made between it and the schoolroom, to admit the western breeze.

(*o.*) The present mud-built married men's barracks, which are almost plinthless and very hot, should give place to new quarters, according to the most recent plan, and on plinths at least three feet high. They should be built in blocks of moderate length, and their number should be increased to what is allowed by regulation.

(*p.*) The privy should be restored to each family, by replacing the partition which has been removed. The building of the separate privy for children should be discontinued.

(*q.*) For the sake of the health of the men employed at stables, the roofs of the stable-sheds should have continuous ridge-ventilators. For the sake of those in barracks the sick horses' stable should be removed from its present close proximity, to a distance.

(*r.*) It is very desirable that the hospital should have an upper-floor dormitory. This would allow of the provision of the day-room accommodation that is now deficient.

(*s.*) The *lavatory* of the hospital should be removed from the veranda. A detached building at its right rear, which was intended to be a cookhouse for the female ward, might be converted into a lavatory for the male hospital, and be connected with it by a covered passage. Or the former lavatory, which is under the same roof as the privy, might be improved according to the most recent plan, and have its ventilation rendered complete, and totally distinct from that of the privy.

(*t.*) The *cook-room* of the hospital should be improved, by having its fire-range placed at one end and provided with a chimney. There should be a fixed boiler, with a cock for hot water. The present fire-range and sink should be removed; a pail should be used for refuse liquids. A room should be partitioned off at one end for the cook, who is required to be always present. There should be a glass window to give light, and, if necessary, to exclude the dust. The present openings in the walls and over the doors should be barred.

(*u.*) The *latrine* of the hospital should have partitions to the seats and doors, and the seats should otherwise be completed, according to the details in the plan lately circulated for guidance. The roof should have a continuous ridge-ventilator. There should be a glazed window at the end, and the present window, on the east side, should be provided with a glazed casement. The openings in the wall towards the hospital should be closed; the doorway should have a spring-hinged self-shutting door. There should be a break in the now continuous roof of the covered passage from the privy to the hospital.

(*v.*) The *dead-room*, which is offensively near to the hospital, and is also, from its position, obstructive of ventilation, should be rebuilt much farther to the rear, and according to the plan lately submitted for approval.

(*w.*) A better site at the S. E. corner of the hospital for the proposed temporary urinary was pointed out to the executive engineer, and it should be adopted.

(*x.*) The *female hospital* should be accommodated in the building now in part used for Native sick. A common ward and a parturition ward should be partitioned off in it. There should be continuous ridge-ventilation. The windows should be converted into half-glazed doors. The masonry in the arch-heads should be replaced with moveable glazed frames, made to revolve on vertical axis. The detached building in rear, intended to be a cook-house for the Native sick, but not used, should be converted into a lavatory and privy, and connected by a covered passage with the hospital.

(*y.*) It is most desirable that a plentiful supply of good water should be available for all, and that there should be filters with drinking cisterns defending the water from dust, and delivering by cock, as was recommended for the barracks in Poona in 1864.

(*z.*) Surface drains should be made to carry off the rain-water from the rear of the barracks,

barracks, where it is said to lodge, also from the enclosure at the south end of the hospital. The latter spot being hollow, should be raised by the addition of earth. The depressions between the staff serjeants' quarters and the barracks should be filled in with hard material.

The tent Lascars' lines and their latrine should be removed from their present position, on the west or windward side of the barracks, to a position north of the arsenal.

THE NAPIER OR EUROPEAN INFANTRY BARRACKS.

The European infantry lines are at the south and south-east of the cantonment, on gravelly ground, that has a gentle slope south-eastward to a small channel that carries off the storm waters, and that thence rises eastward to the married men's barracks and the hospital, which stands on more elevated and rocky ground.

2. There are 10 *barracks*, built with an aspect about W. S. W. in two rows, six in the front and four in the rear row, with intervals of about 120 feet between barrack and barrack. They are very substantially constructed of stone and lime-mortar, on plinths originally two feet high, but now at some parts less, apparently from the accumulation of drifted sand. They are paved, and the pent roofs have a single layer of tiles over a layer of clay and chopped straw. There are no ceilings. There is, on both sides, an open veranda 11 feet wide, with the eaves of its roof 8½ feet high above the floor.

3. The men's room, being 279 feet by 24 feet, has a floor surface of 6,696 feet, and, with walls 20½ feet high, has 137,268 feet of space. There are on each side 25 doors 4 feet wide, or 3 ft. 8 in. clear of the frame, and 8 ft. 2 in. high, and 24 piers 7½ feet broad, or seven feet exclusive of splay, and at each end a corner with 4½ feet of wall.

4. The doors have two pannelled shutters; in the upper part of each there is a pane of glass. Over the door there is a glazed rectangular revolving frame, 1 ft. 8 in. by 3 ft. 8 in. in the clear. There are also clerestory and interrupted ridge-ventilators, which are not sufficiently defended from the indrifting of rain. The doors were lately divided horizontally, to allow of greater and more satisfactory command over the ventilation, and the expedient has been beneficial.

5. At each end of the men's room there are two *serjeants' rooms*, separated by a narrow passage leading from the end door of the barrack room. They include the portions of veranda opposite them, and are each 20 feet by 12 feet, with the long axis directed across the building; they are 18 feet high. Beyond these rooms, at each end, there is an open veranda about 10 feet wide. The serjeants' accommodation is deficient in amount, and the more easterly room is cut off, in a great measure, from the breeze.

6. The linear measurement and floor surface are enough for 74 men in a room, or 37 on each side, and that number would have fully the regulated cubage. However, with only 24 piers, having a breadth of only seven feet each, and two corners, no more than 26 cots can be placed on a side, without being either too near each other or encroaching on the doorways. At the time of the inspection, part of the accommodation had been given up to a detachment of a relieving regiment that had arrived, and the remainder was temporarily over-crowded by the men who were on the eve of departure.

7. Calculating according to floor surface, the 10 barracks would hold 740 rank and file, but if every cot were to be placed in strict accordance with rule, the barracks would hold only 520 men, who, would have fully the hospital, instead of merely the barrack, allowance of floor and space.

8. There are no dining or day rooms, and the men take their meals in the open verandas.

9. There are detached *lavatories* in rear; they are not yet completed; they are insufficient in accommodation and in lighting.

There are no seats in the bath rooms.

No drainage has been provided, and the waste water lay in pools beside the buildings.

10. The *plunge-bath* is near the rear row of barracks; it is above the surface level; it is enclosed, and has glazed windows. There is a small ridge ventilator. There is a ledge, three feet wide, along its sides. The depth at the foot of the steps and for a quarter of its length is 4½ feet, at the middle it is 6½ feet, and at its farthest end 7½ feet. The bath is usually emptied after being a week in use, and it takes a week to re-fill it from a neighbouring well. The water is discharged at some distance, by an open masonry conduit, into the watercourse that has been mentioned. There are no benches, pegs for clothes, or urinary for the bathers.

11. There is a *cook-house* for each company. Its dimensions are 20 feet by 12 feet by 11½ feet. There is an open veranda, with its eaves only 6½ feet high. There are a roof ventilator, and doors on one side, and windows on other two sides. The fire range is out of repair. There is no chimney, and the room is very smokey, and its walls are blackened. The raised sinks have not been given, and cess-pits for liquid refuse are still in use; these are emptied daily, and tank carts are used in carrying away the waste liquid to the

the filth pit. The carts and bullocks are the property of the regiment. A pair of bullocks makes six or seven trips in a day to the manure yard, two miles distant; the tank, which is four feet by three feet by 1½ feet, holding during the outward part of the trip about 112 gallons.

12. The *latrines* were being altered in conformity with the plan recommended by this commission. Some points in the detail were explained to the executive engineer, who was present.

13. The original *canteen* building is given for other purposes, and a smaller building is used as a canteen. The room is small, but, it is said, sufficient in size for those who frequent it. Refreshments, consisting of corned beef, stew, fish, and coffee, are sold in the evening. The *canteen sergeant's quarters*, at one end of the building, consist of one room, 15½ feet by 9½ feet, and *another* 14 feet by 10 feet, with a height of 8½ feet; they are close to the liquor store.

14. In another small building, at some distance from the canteen, there is a *shop* and *coffee-room*, where the men take coffee in the morning, while standing.

15. At the right rear of the barracks there is a *recreation-room*, which has been made of the iron frame of one of the temporary barracks. It is 195 feet by 40½ feet, and its height is 12½ feet. The plinth is two feet high, the walls are of wattle and mud, and are not protected by a veranda from the weather. The roof has very little pitch, and is covered with clay without tiling. There are interrupted ridge ventilators insufficiently protected from the rain, and a continuous ventilating opening under the eaves on the west side. There are half-glazed doors and glazed windows. It is divided into *library* and indoor-games' rooms, and refreshment room. There are a double fives' court, two bowling alleys, and a skittle alley. There is a regimental cricket ground, and almost every company has its own cricket ground and club.

16. There is a temporary block of *workshops* at the right flank of the barracks, and in the former canteen building the printers and bookbinders have their shops; and under the roof of the same building are the orderly and court-martial room, the quartermaster's office, and the quartermaster serjeant's quarters.

17. The *serjeants' mess* and *orderly-room* were formerly under one roof, now the orderly-room is the regimental tailors' workshop. The serjeants' mess has its side doors, like those of the barracks, pannelled, and with a pane of glass near the top. The south veranda is added to the room by a large archway, and at each end of that veranda there is a small room. The mess cookhouse is without chimney, and is smoky.

11. *Schoolrooms.*—In one building there are the adults' and the children's schoolrooms and a room in which the clergyman has meetings. The door are like those of the barracks; there are tubular ridge ventilators. At the end there are the teachers' quarters. The schoolmaster has a sitting room, and two bedrooms, with the partition between them running north and south, and without door or other opening to allow of perflation. The schoolmistress has two small rooms.

19. The *staff serjeants' quarters* are in one building, with a plinth two feet high, and divided into two rooms 14 feet by 14 feet and 14 feet high, one occupied by the serjeant major, the other intended for the quartermaster serjeant. There is a veranda 9½ feet wide, and of which portions are enclosed to form rooms that have their outer wall nine feet high. The general height of the eaves of the roof is seven feet. There is a double set of out-offices under one roof, excepting the two privies that are made into one.

20. The *quarterguard* room has a plinth three feet high, but its veranda plinth is but two feet high. The room is 66 feet by 24 feet, and thus has a floor surface of 1,584 feet, and, the height being 20 feet, the cubage is 31,680 feet. There are six doorways on each side eight feet by 3½ feet clear of the frame; the doors are pannelled, and at their upper part they have, like those of the barracks, a pane of glass. Over the doors there are barred frames. Besides the pannelled, there are likewise iron barred doors, to prevent, it was suggested, the prisoners kept in the guard-room from breaking out. The clerestory openings are venetianed. There is a small ridge-ventilator. On each side of the room there are five piers seven feet broad, and two corners with 3½ feet breadth of wall. The guard is three non-commissioned and 12 rank and file, giving four sentries. There is no serjeants' room, and there is no convenience for putting aside the bedding of the men on sentry; 15 cots stand in the guard-room. The floor surface and space are fully sufficient for the guard, and, although the corners are rather small for the cots placed in them, they, with the piers, which afford ample room, give places for 14 cots. The cots of the sentries might advantageously be dispensed with, were there shelves in the veranda on which to place the bedding.

21. There is no *detention-room* excepting two cells that open into one end of the guard-room. Each cell is 10 ft. 9 in. by 11 ft. 9 in., giving about 130 feet of floor surface, and, the height being 20 feet, the dimensions agree with those that are required for cells on the plains. The floor is paved. There is no fixed sleeping bench, merely the trestle with moveable planks. There are two barred windows, five feet by 3½ feet, towards the veranda, with pannelled shutters, and with sills only 2½ feet from the floor, also 12 clerestory openings. One cell was found to be in use as a urinary. The night before the inspection,

from want of a defaulters'-room, eight prisoners, it was said, slept in the guard-room with the guard, the entire number at the time being, exclusive of sentries, 19. At the other end of the building there is a store-room. There is neither lavatory nor privy for the guard.

22. The *solitary cells* are at a considerable distance in rear of the barracks, and north of the family quarters. They are in an enclosure, and form three blocks of four cells each. The veranda plinth is only one foot high; the floor of the cell is a foot higher. The cell is 9¾ feet by 9¾ feet and 10⅓ feet high, as measured to a partial wooden ceiling, but, were that partial wooden ceiling removed, the wall would be found to be 16¼ feet high. There are an inner pannelled, and an outer barred, door in front, a window in rear, 2½ feet from the floor, with fixed bars, and inside a plank shutter. There are two ventilating openings on the floor level, and clerestory opening; the veranda is six feet wide. There is no fixed sleeping bench. The reconstruction of the guard-room is being planned.

23. There are four blocks of *married men's quarters.* One block of 14 quarters stands on low ground, and has a plinth only one foot high. There are an open common front veranda seven feet wide, and a rear veranda 11¼ feet wide, portions of which are enclosed as ablution rooms. Each family has a front room 16¼ feet by 13 feet by 15 feet, with a front door 8 ft. 4 in. by 3 ft 8 in., clear of the frame, and a window 4 feet by 2¼ feet; and a back room 12⅔ feet by 13 feet by 15 feet, with a back door 6⅔ feet by 3¼ feet. All the arch heads are built up. The partition between the front and rear rooms is only partial, being eight or nine feet high, and this arrangement is highly beneficial, as it allows of a freer current of air than it otherwise would have, reaching the back room. There is a door in the partition too close to give privacy.

24. The other blocks stand on a low rocky acclivity, and two of them contain 20 quarters each, and the fourth so many as 26. In rear of the quarters and at right angles to them there are the out-offices, consisting of a cook-room, lavatory, and a privy, for each family, built in pairs. It had been ordered to do away with the privy for each family, and to erect a common one for males at one end of the range of quarters and another for females at the other end, because it was understood that the use of dry earth would require such constant attention of the sweepers as could not be given by the present establishment or with any reasonable increase of it. No such increase of work being really involved in the new system, the executive engineer was requested to keep the execution of the plan in abeyance for the present, as the inconvenience to families with children that would attend the having to go from one end to the other of a range of 20 or 26 quarters, would be very great. There is no drainage for the lavatories, and the rocky ground between the quarters and their out-houses is very uneven.

25. The *hospital* is on a low rocky ridge, a short distance south of the married men's quarters. The aspect of the building is nearly the same as that of the barracks. It is on a plinth, which in front is about 3½ feet high, but in rear is but little raised above the ground, and it is substantially constructed of stone and lime-mortar. The male hospital consists of three ground-floor wards and an upper ward over the middle of them.

26. The two flank wards, being each 88 feet by 24 feet, have a floor surface of 2,112 feet, and, the height being 18 feet, the cubage is 38,016 feet. There are on each side of the ward seven piers seven feet broad, and corners measuring 2 ft. 8 in. to 3 ft. 10 in. There are eight doors eight feet by 3½ feet in the clear, and revolving glazed frames 1 ft. 8 in. by 3 ft. 7 in. over the doors. The front and rear verandas, opposite these wards, are 11 feet wide; they have tiled floors, in bad repair. The centre ward resembles the others, but is a little longer, its length being 96 feet, and it has nine doors on a side. Its rear veranda is enclosed, and is only 9 ft. 9 in. wide.

27. The upper ward is approached by an inconvenient stair in the rear veranda of the centre ward. It is 96 feet by 23 ft. 9 in., or has a floor surface of 2,280 feet and a space of 30,780 feet, the wall being 13½ feet high. There is an enclosed back veranda 10½ feet wide, and no front veranda. There are eight windows 3½ feet by 2¾ feet, with sills 2¼ feet high, and nine doors 8 ft. 4 in. by 3 ft. 7 in., partly glazed, venetianed, and pannelled. The lavatory of this ward is a small room at the end of its veranda, ill-arranged and imperfectly furnished. In a corner of the veranda there was a common, old pattern, iron urinal on a wooden trestle, with a heap of sand on the floor under it. The medical officer was advised to apply for glazed stoneware chamber pots, in substitution of this offensive arrangement.

28. Each of the flank wards holds 16 cots, with due allowance of space and regard to their position with respect to doorways. The middle ward on the ground floors holds 18 cots. The upper ward is ill-proportioned, and, although its area would admit of 19 beds, its cubage allows of only 12 at the regulated rate of space. Even if the larger number be taken, the total accommodation in the four wards is only 69 instead of 92, or there is a deficiency equal to 23 beds.

29. At each end the building is terminated, as in the barracks, with two rooms that include portions of the verandas. At the right of the hospital, and in a line with its rear veranda, there is a detached dispensary.

30. The *hospital cook-house* is without a chimney, and is smokey.

31. There

31. There is a *lavatory* at each end of the rear veranda on the ground floor, of dimensions 9 ft. 9 in. by 11 ft. 9 in.; it is furnished with a table with moveable basins, a scuttle-butt with water, a floor grating much too high, and a shower bath that is never used. There is no screened bathing-place. The waste lavatory water is received in cesspits, which are daily emptied by hand.

32. The *latrine hospital* is of the old, very faulty design; its reconstruction has been ordered.

33. The *dead-house* is too small, is very imperfectly paved, and is overlooked from the latrine, to which it is very near.

34. There is no *isolation ward* for those suffering under contagious disease. There are two cells in the hospital courtyard, similar to the regimental solitary cells, intended, it was said, for prisoners requiring medical treatment.

35. The *hospital guard-room* is on a plinth two feet high. The room is 17 ft. 9 in. by 17 ft. 9 in. by 13½ feet, with a veranda 6¾ feet high. There is no roof ventilation.

36. The *female hospital* is in line with the male hospital, and in an adjoining enclosure. From the ground sloping, the plinth, although three feet in front, is but little above the ground in rear. There is an open veranda, 10 feet wide in front and in rear; the veranda eaves are only 7 ft. 4 in. high. There are two wards 23 ft. 9 in. wide and 18 feet high. The length of one is 40 feet, and it has four doors on each side. The length of the other is 20 feet, and it has two doors on a side. There are interrupted ridge ventilators. At each end there are two rooms, arranged like those of the barracks, with a passage between them; the front room at one end is the matron's quarters, and the front room at the other end is for the assistant matron. The rear room, at each end, is partitioned into a lavatory and a store-room. There is a detached privy 50 feet in rear, with a covered passage, and behind it there is a dead-house. There is also a cook-house that is never used, as all cooking is done in the male hospital cook-house.

37. There had been since the rains *much sickness* among the men in the form of *malarious fever*, even more than was shown in the returns, as many for slight attacks were treated by the surgeon, without being admitted into hospital.

38. The *drinking water* for the regiment is drawn from one of the commissariat wells, and is conveyed by pipes, laid under ground, to an open reservoir, surrounded with a dwarf wall and covered, at some height, with a tiled roof. It is said the reservoir is cleaned out at least once a month. The reservoir is open to receive dust or whatever may be carried to it by the wind, and the water carriers were seen standing on the parapet while drawing water with their buckets, and spilt water was seen flowing back into it over their dirty feet. Analyses of samples of the water drawn at different times have given different results, but all have shown so large an amount of saline matter as to make it very desirable that water from a better source should be obtained. The present mode of drawing the water from the reservoir might be changed for a better.

39. The *officers' lines* are bungalows in enclosures, intended to be gardens, on the west of the barracks, and the line of separation between what is under civil and what is under military jurisdiction lies along the western side of the most westerly row of officers' houses.

40. Owing to the frequent representations of the medical officer of the regiment in his sanitary reports, which had been brought by this Commission to the particular notice of the military authorities, the lines of the officers were closely inspected, and their condition was found to be very unclean, and fully to justify the medical officer in what he had written about them. The filthy condition of the servants' privies especially demanded immediate attention. The local military authority, when personally spoken with on the subject, stated that he had not legally the power to remedy the evil, the houses being the property of civilians who let them to the military officers.

Recommendations.

(*a.*) The rule, that upper floors only should be used as dormitories in all parts of India, should not be neglected at Kurachee, where present experience shows the prevalence of febrific malaria, and its greater effect among the men occupying the ground floor Napier barracks, than among the artillery men who have upper floor dormitories. The walls of the present barracks are sufficiently strong to bear upper stories, which might be added if the present faulty distribution of doors and piers will admit of conversion, so as to give piers 10 feet broad and doorways five feet wide.

In the reconstruction, the now deficient accommodation for serjeants should be replaced with what is approved. Dining and day-rooms also should be provided for the men. If entire reconstruction be found necessary, then the buildings should be removed farther from the Sudur Bazaar.

(*b.*) For immediate comfort and well-being the ridge ventilators should be thoroughly secured against the inbeating of rain, by a much greater overlap, than there at present is, of their eaves; three or four feet would not be too much, even if the gap were no more

than eight inches. If the gap were much wider, a course of planking might be laid across the lower part of the struts supporting the raised portion of the roof. The ridge ventilator should be made continuous. The clerestory openings should be protected with bonnets. The upper pannels of all the doors should be replaced with glass.

The suggestions for the improvement of the ridge ventilators are applicable to those of all the buildings in the lines, which have such ventilators, and should be followed.

(*c.*) The lavatories and bath-rooms, now in progress of improvement, should be completed in close accordance with the plan which has recently been submitted by this Commission to Government. The foot gratings should be of moderate thickness.

Immediate measures should be taken to drain, not only those of the unmarried men's barracks, but also those of the hospital, the married men, and of all others, to an outfall prepared in the bank of the watercourse near where the waste water of the plunge bath is now discharged, or a little south of that spot. A pit to be filled with rubble should be dug for the purpose, in the bank of the watercourse and covered over ; the water discharged by pipe into it would percolate into the bed of the watercourse or its subsoil, which would be cleansed by the freshets after rain. Piping used for this purpose should have perforated metal strainers at its inlet and outlet orifices, to prevent rats or other animals lodging in it.

(*d.*) Addition should be made to the supply of water to the existing plunge bath, and to the means of re-filling it. Fixed benches and pegs for clothes should be given, and a urinary of a temporary sort should be constructed close to the bath, and communicating with it by a doorway, to be opened near the north-east corner, and a screened passage. Another plunge bath should be provided for the left wing of the regiment.

(*e.*) The cook-houses of the barracks should be altered in conformity with the plan which has been laid by this Commission before Government. The cesspits should be removed, and chimneys should be given, not only in the case of barrack cook-houses, but in that of every such building.

(*f.*) The modification of barrack and all other latrines should be carried out in strict accordance with the drawings circulated by Government at the request of this Commission.

(*g.*) A gymnasium and another double fives court are required to complete the means of recreation allowed for the men of the regiment, and one side of the existing fives court has yet to be adapted for racket playing. The recreation-room, of temporary construction, should have a narrow veranda to protect its walls, and its ventilation should have protection from the rain.

(*h.*) The serjeants' mess should have connected with it a library and recreation-room. The doors of the mess-room should have their upper halves glazed.

(*i.*) In the school building also the doors should have their upper halves glazed. The dead wall between the two bedrooms of the schoolmaster should have a large door for communication and for ventilation, and over the door there should be a frame of fixed venetians.

(*j.*) The staff serjeants' quarters should be rebuilt after the standard plan. The privies of the two families should be separated.

(*k.*) In the quarter-guard, pavement should be substituted for earthen flooring ; the doors should be half-glazed. A detention-room, according to the standard plan, should be added. The cells should not open into the guard-room. A shelf should be provided in the veranda for the sentries' bedding, to gain more room for the guard by removing the unoccupied cots. A lavatory, privy, and a temporary urinary should be provided for the guard. The cell should not be allowed any longer to be used as a urinary. The improvement of the ridge ventilators of all buildings has been recommended under (*b*).

(*l.*) The solitary cells are too small, having a floor surface of only 95 instead of the regulated 130 feet, and a cubage of 998 instead of 2,600 feet. The full amount of room should be given to the prisoners; this might be found by converting the four cells of each block into three, and by raising the walls to 20 feet. The barred window should be placed high in the wall, beyond the prisoner's reach. His sleeping bench should be of massive timber firmly built into the masonry.

(*m.*) In the married men's quarters the arch heads of the front and back doors and windows should have glazed frames, to be opened and shut by revolving on vertical axis The ground between the quarters and the out-houses should be made even. The lavatories should be drained by pipe to the bank of the watercourse, as above recommended. Each family should be allowed to retain its privy, and where the partitions of adjoining privies have been removed they should be replaced.

(*n.*) The deficient accommodation of the hospital should be supplied, and a new upper floor should be raised over all the hospital. The present doors should be half glazed. The lavatories and cook-room should be improved according to the standard plans.

(*o.*) A new dead-house should be built at a greater distance in rear than that at which the present one stands. It should be after the plan which this Commission has submitted for the approval of Government.

(*p.*) Isolation

(*p.*) Isolation wards, for the treatment of those suffering from contagious disease, should be built.

(*q.*) The guard-room of the hospital should be improved according to the standard plan, lately circulated by the Government of India.

(*r.*) It is very desirable that better water should be found for the troops, and that whatever water is supplied for drinking and culinary purposes should be preserved from defilement in its distribution. Eventually, and with as little delay as possible, every barrack and every cook-room and the hospital should have delivery of water by pipe and tap. In the meanwhile the reservoir should be boarded over, and water should be drawn from it by pump instead of by dipping.

(*s.*) The condition of the officers' lines should be thoroughly improved, with the authority that may be found to be already in existence, and any imperfection in the law should be remedied.

FITZCLARENCE, OR DEPÔT BARRACKS.

THESE barracks are between the Napier barracks and the Native Infantry lines, and nearly all have the same, W. S.W., aspect that the other barracks at this station have. They are nine in number, standing in two rows, four in front and six in rear, and the two right end barracks of the rear row are placed so as to form angles with the common line of the others. There is an interval of 180 feet between the rows, and, between the front line and the row of married men's quarters in front of it, there is a distance of 200 feet.

2. The barracks are on low plinths, and constructed with a frame, having two rows of wooden posts 14 feet apart, and side walls of sun-dried brick, seven feet outside the posts, giving a total width of 30 feet to the room. Beyond the walls there is an open narrow veranda. The floors are earthen and uneven. The buildings are gabled, and have a pent roof with interrupted ridge ventilators, imperfectly protected from the rain. The side openings of the rooms are partly doors and partly windows. The piers are alternately 16 and six feet, and in the broarder, or every second, pier there is a circular opening four feet from the floor, with a glazed frame, a foot and a half in diameter, revolving on a horizontal axis. The other windows have glazed casements, and upper portions that open horizontally.

3. At each end, projecting beyond the gable, there are, towards the front, two serjeants' rooms, 11 feet high, and ventilated by venetianed clerestory openings over the narrow veranda. Towards the rear, and separated from the serjeants' room by a narrow passage that communicates with the end door of the men's room, there is a paved room, latterly used as a lavatory but which formerly was a urinary. There is no dining or day room for the men.

4. In front of the married men's quarters, and between them and the officers' lines, which are farthest to the west or windward, there are three flat-roofed buildings in line, on plinths about two feet high. In these there are the guard-room and two adjoining cells, the rear one cut off from the breeze; a canteen which has no liquor-store and no bar; a serjeants' mess-room, an orderly-room, and two school-rooms which are temporarily and partially partitioned, with reed matting, for the accommodation of families, because some of the family quarters are still in the hands of workmen. The rooms have earthen floors, plank doors, and great extent of dead wall. There are venetianed clerestory windows, and there are small wind towers to catch the south-westerly breeze.

5. In rear of one of these buildings there is a small room, formerly a cook-house, that is now converted into a court-martial room.

6. In rear, or north-east of the barracks, there are the *cook-houses* of the men. They have lately been paved; they are of the old plan and have no chimneys. Raised sinks, it is said, are to be given, and the cesspits are to be disused.

7. There are three latrines, of 16 seats each, for the men, they are of sun-dried brick, and are being enlarged with stone masonry, and are in progress of assimilation to the standard plan. At the rear flanks there are two latrines, for females, that are now closed.

8. The *family quarters* are in six blocks placed in line, at intervals of about 70 feet; they are on very low plinths, have walls but $10\frac{1}{2}$ feet high, and roof with little pitch, and ridge ventilators with little or no overlap to prevent the indrifting of rain. These roofs have recently been repaired or renewed; formerly there were small wind towers for ventilation. Each block had 15 quarters of very limited dimensions; now two quarters are made into one, so that in each range there are eight double quarters and one single. This is a great improvement, but still the accommodation is bad. The out-offices are in rear, in double sets, at right angles to the general line, and each family had its own cook-room, bath-room, and privy; now those privies are suppressed, and a common one is being built for women, detached from, and in advance of, the block, at its windward corner, and another for men in the gap between the neighbouring ranges of quarters.

9. *Staff Serjeants' Quarters.*—The serjeant major's bungalow stands in the middle of the line of family quarters. It is a tiled house, of sun-dried bricks, on a two feet plinth, and with a veranda 6½ feet wide. It contains two rooms 14 feet by 14 feet and 14 feet by 12 feet respectively, and 11 feet high; they are not ventilated. It has out-houses of sun-dried brick in bad repair. There are now being built, opposite and near to its front corners, the privies of the women of the family quarters, and, opposite its rear corners, the privies of the men. These cannot but prove a grievous inconvenience to the staff serjeants.

10. The sun-dried, brick-built female hospital has been appropriated as quarters for the apothecary. The *male hospital* is constructed of stone and clay mortar, and is in two gabled buildings that stand in line, and a third in rear of them, on sloping ground, with a plinth that in front is 3½ feet high, but behind is even with the ground. The roof trusses are supported on rows of posts which are 14 feet apart, and, as in the barracks, a wall is built about seven feet outside the row posts. Each of the wards in the two front buildings is 30 feet wide and 89 feet long, and thus has a surface of 2,670 feet which would suffice for 22 inmates, but in reckoning the running measurement there is scarcely enough for nine on a side, or 18 in the ward, but as the wall is only 9¼ feet high there is cubage of air for only 10 sick persons. In the front buildings there are on each side eight windows and a central door. The window in clear is 4½ feet by 3 feet, and has a glazed casement with an upper part opening horizontally. The piers are from six feet to 6 ft. 4 in. At the north end there are two small rooms, and the open veranda extends round the south end. The lavatory is a shed with mat walls. There is a privy, with a covered passage, at the south corner; it is of old, faulty, plan, and is to be altered. There is a cook-room in rear between the wards.

11. The rear building is like the others in construction, but its accommodation is differently arranged. It has four middle rooms, one of them being used as a dispensary, and the other three as small special wards. The partitions are but partial. At the ends there are larger wards 69 feet by 30 feet and 9¼ feet high. This also has its out-offices of temporary construction in rear, a dead-house similar to that of the Napier barracks, and sheds for the second-class hospital servants. These sheds had their sides closed, in a most untidy manner, with dirty old tattered matting.

Recommendations.

(*a.*) The barracks have before been reported to be unfit for the permanent occupation of European troops. They afford better shelter from heat and rain than that of tents, but, even as rest-houses they ought, if capable of it, to be improved. It is feared that giving them good floors on well raised plinths would be impracticable, but increasing the side openings to allow freer perflation may be so. It is desirable that, where there are now the small circular windows, doorways should be made.

(*b.*) The ridge ventilator should be immediately improved by giving it sufficient overlap, as already recommended in other instances in this report. The ventilator should be continuous.

(*c.*) The lavatory room at the end of the barrack should be properly ventilated and added to the serjeants' accommodation, a detached lavatory being provided for the men.

(*d.*) The cook-houses should be improved in accordance with the standard plan recommended by this Commission.

(*e.*) The latrines of barracks, hospital, and all other subsidiary quarters should be improved in conformity with the standard plan. The latrines of the family quarters should be placed to leeward instead of to windward.

(*f.*) As the staff serjeants are not mere travellers, but are permanently stationed with the depôt, their quarters should in all respects be equal to what is allowed by recent order. The very objectionable vicinage of the serjeants major's bungalow has been mentioned.

(*g.*) The construction of the hospital would not admit of much alteration. The walls, however, should be raised to the usual height, clerestory ventilators, duly protected from the weather, should be added, and the ridge ventilators should be improved.

(*h.*) The condition of the second-class servants' huts should be at once improved. It is objectionablethat such filthy habitations should exist in any cantonment, and particularly so that they should be allowed in hospital premises.

NATIVE INFANTRY LINES.

The lines of the Native Infantry regiment are at the north-east of the cantonment, and between the Fitzclarence barracks and the soldiers' bazaar, which is under civil control. The ground is in some parts intersected with dry watercourses. There is a deep trench cut round the lines of *pendal*, to intercept and carry off the storm-waters.

2. The

2. The *pendals* have nearly flat roofs, covered with clay. They are wide, and, when occupied, have a middle central partition, and at every nine feet transverse partitions, none of these being more than 5¾ feet high; all have benefit from the raised roof ventilators. Each room has a low arched doorway in the outer wall, which is of sun-dried brick, and is protected by a veranda that is generally enclosed by a wall, which is not, however, allowed to reach the eaves.

3. When it rains the room under the ventilators are uninhabitable on account of the water that falls on the floors. The use of cesspits, that once was common, has been entirely discontinued. There is still the inabilty to dispose satisfactorily of the bathing water, which exists in all Native regiments.

4. The latrines are about a furlong to the northward of the nearest *pendal*, and fully a quarter of a mile from the most southern, a distance too great for the families to go, especially during sickness. The latrines are most offensive. There is a sloping pavement under the seats, from which what is liquid flows, and, at the end of the building, falls into a very large cesspool along with the urine that flows along a gutter in front of the seats. The plan, as well as the position of these offices, is faulty. They are south-west of the soldiers' bazaar at a distance of about 40 yards from it, and are a nuisance, which would be denounced, and would on no account be toletared, in a similar position, by any military population.

5. The hospital is about 4½ furlongs in rear of the men's lines and beside the commissariat yard. It has two wards separated by the surgery. There are ridge ventilators and the means of perflation and ventilation, but, the glazed windows of the wards and of the enclosed verandas being within command of the inmates, they were found at the inspection to be all shut, both on the windward and on the leeward sides.

6. There are no bathing-rooms attached to the hospital, and the sick, whatever the state of the weather may be, have, when they bathe, to go to the side of a well, where there is no cover for them. When a warm bath has to be given, the tub has to be placed on the earthen floor of the ward, which thus gets wetted. The difficulty of keeping the earthen floor unbroken is complained of.

RECOMMENDATIONS.

(*a.*) The roof ventilators of the men's *pendal* should be protected from the indrift of rain by a sufficient overlap of the raised portions.

(*b.*) The waste bathing water of the families should be conveyed away in surface drains made of roof tiles joined with lime-mortar, as recommended for general adoption in Sanitary Commission's letter No. 387, of 1866.

(*c.*) New latrines, according to the design which has been recommended by the Commission, should be built, at a shorter distance than the present ones are from the north end of the men's lines, and there should be tank carts employed in connection with them. No cesspool should be allowed.

(*d.*) There should be moveable glazed frames over the doors and windows of the hospital, so that fresh air may be admitted without a draught blowing directly on the sick.

(*e.*) A bath-house, consisting of two rooms, should be built adjacent to one of the rear corners of the hospital; it should be near, but not actually continuous with, the veranda, and should have a plinth of sufficient height to allow of the waste water flowing by pipe to water a garden.

(*f.*) The floor of the hospital should be paved.

GIZREE SANITARIUM.

THE barracks are about three miles south of Kurrachee Cantonment, and on a promontary between the Gizree and Chinnee creeks. The boundary of the land annexed to the sanitarium at one time included the elevated plot of ground on the west, called Clifton, but now the military limits are greatly contracted. Between the sanitarium and Kurrachee Cantonment there is no cultivation, and only a nearly bare waste. Towards the west and south there is a rather steep descent, over loose siliceous and micaceous sand, to a sandy plain or to a succession of low sand hillocks thinly sprinkled with *salsola* and *calotropis* bushes, and that intervene between the barracks and the sea. In this direction, although in it the sea is nearest, the nature of the ground renders access to the beach impracticable, and, on account of the depth of the sand and its constant drifting with the wind, no ordinary road across it could be maintained. The invalids have to make a circuit by Clifton, along a harder path, to reach a bathing-place. Towards the south-east the ground falls more gently until, about half way to Gizree Bundur, it meets the tidal foreshore, where there is a great extent of land that is covered only by the high spring-tides, and a yet wider extent which is submerged daily by the ordinary tides. On the reflux of the water at springs, a surface of mud of many miles is laid bare at the mouth of the creek. The shore on that side is muddy and unsuitable for sea bathing.

2. Eastward of the barracks, and near them, there is a ravine, with precipitous but not very high sides, and with a flat bottom of alluvial soil, which after rain is a swamp that is frequented by snipe. An earthen dam was thrown across the gorge at its lower or eastern end, with a view to impound the storm waters for use. The object has not been gained, and evil instead of good is caused by the obstruction that is offered to the speedy outflow of the water. Wells that have been sunk in the ravine have, it is said, produced only brackish water. The area of the alluvial bottom is about 47 acres.

3. The rock, seen protruding on the surface of the ground and in the sections exposed in various places, and more largely in the bluff on the seaward face of the small, flat topped, rocky elevation that stands eastward of the baracks, is seen to be the same as that of Kurrachee generally,—a tertiary limestone with strata or beds composed almost entirely of comminuted sea-shells, interchanged with layers that have in their composition a large addition of clay or of siliceous sand. There are also seen beds of rolled nodules of foraminiferous limestone.

4. The barracks are in two blocks, on plinths only a few inches high. The walls, 12½ feet in height, are constructed of stone and clay mortar, and a tiled roof has its ridge pole supported on a row of pillars. The piers between the glazed windows or between windows and doors are 10¼ feet broad. There is an open veranda on the south-west side. The only arrangement made specially for the purpose of renewing the air in the room is an interrupted line of ridge ventilators. Owing to inadequate overlap of the raised portion of the roof, rain is admitted by the gap.

5. Where the whole of the two buildings available as barrack-rooms for the men, they, according to the regulated allowance of floor surface, would hold 138 men. Were the correction of this according to cubage to be made, the capacity of the barracks would be only for 86 men. They are not, however, used solely as dormitories for the men. Portions are appropriated as guard-room, canteen, dispensary, and church, compounder's quarters, hospital, library, and orderly-room. There is accommodation left according to cubage for only 65 men, without any day or dining-room. The officer in command mentioned that the invalids here, contrary to the custom at other sanitaria, brought their arms with them, and that the records showed the evil that resulted, in quarrels among the men. This should be remedied.

6. The deficiency in conservancy establishment was stated to be the probable excuse for the precincts of the sanitarium, not the buildings themselves, being ill-kept and unclean at the inspection, as it was said they had been found, when, a few days before, the present officer in command took charge from his predecessor.

7. There is not sufficient accommodation for non-commissioned officers and the non-commissioned staff. The apothecary has a detached house, and the officer in command and the medical officer have their quarters under one roof. There are three houses for sick officers. Excepting the library there are no means provided for the recreation of the men. There is no day-room or dining-room.

8. The improvement of the buildings of the sanitarium was under consideration, and it was found that they could not be rendered satisfactory for the accommodation of European invalids, and the alterations were restricted to what was thought to be most immediately required. Detached lavatories are being built close in rear of the barracks, and as those who are very sick cannot in all seasons go to the barrack privy, about 70 feet distant, at the suggestion of the Sanitary Commission a small privy of temporary construction, bamboo and matting, is to be erected against the end of the lavatory, and it is recommended that it should be scrupulously reserved for the use of the very sick, lest it should become a nuisance to the barracks.

9. As, after rain, the water flows from the somewhat higher ground behind and lodges near the barracks, a trench is being cut to catch and divert any such flow.

10. It having been decided by Government that a new sanitarium for 200 men shall be built, and that Gizree shall be its locality, the ground was examined with the view of finding a suitable site. The ridge which is now occupied is much too small for the improved barracks and subsidiary structures.

11. The best site was found on the rather higher ground over which the cart-road from Kurrachee passes to Gizree, and which lies north and north-east of the ravine that has been mentioned. The surface is even, and has a moderate fall to the south-west, and also to the east and south. The extent is abundant for the purpose, and the part of the sea-shore where the men can bathe is equally easy of access from this spot, as from the present barracks. Drinking-water will still have to be brought from a distance.

12 The marshy bottom of the ravine would, if left in its present condition, be a grave objection to the occupation of the site to its leeward, but it would be rendered innocuous by removing the dam, and draining systematically and efficiently the subsoil. The drained ground would become exhausted of its superabundant saline matter, and might be beneficially turned into gardens, in which the waste lavatory water should be made useful. The hollow, so far as it lay to the windward, would intercept the drifting sand, which causes great inconvenience and annoyance in the present barracks and officers' quarters.

13. The

13. The subsoil drainage of the marshy hollow should be considered to be an indispensable preliminary to the occupation of the proposed new site, and the drains should be of a permanent kind and laid with the greatest care, and with true gradients, at about three or three-and-a-half feet below the surface, and at intervals adapted to the nature of the soil as to stiffness.

14. The aspect of the new buildings should be west, that being the point from which the wind blows most frequently in the hot weather, and also during the whole year. This recommendation is based on the result of the observations made during the five years 1860 to 1864. The calculated results show that the number of days in a year that it blew from the eight principal points were, from the—

North	days	13·0	South	days 5·2
N.E.	„	14·7	S.W.	„ 36·8
East	„	32·5	West	„ 166·2
S.E.	„	9·6	N.W.	„ 52·0

It was calm on 33·2 days, and no observations were recorded on 5·3 days.

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President, Sanitary Commission.

REPORT on the SANITARY CONDITION of the TOWN of KURACHEE.

THE limits, within which the Municipal Act XXII. of 1850 is applicable, reach from Trinity Church, 12 miles westward, 5¾ miles northward, and 3½ eastward, while they embrace Munora point, 5¾ miles to south-westward, and Gizree, 4½ to the south-eastward. The area circumscribed by a line joining those points does not all belong to the municipality, as the cantonment, which it includes, is under military rule, and the sea makes large reservations on the south on behalf of Imperial ownership. Highwater-mark is close to the old town, which is two-and-a-half miles westward of the church, and, at the ebb of the tide, an exposed surface of mud stretches about four miles due westward from the town. On the south there is a tidal foreshore 1¼ mile broad, and spring tides send water, by still existing channels, to within 100 yards or less of the main or Bundur road.

2. Portions of the foreshore, over which the sea flows daily, are green with Avicennia bushes, but there is a large extent over which only spring tides rise, although in their rise and fall they differ hardly two feet from ordinary tides, the range of which is eight or ten feet. Neaps have a range of three or four feet. Little has yet been done directly in reclaiming from the sea, but the harbour works have prepared the way for future operations. It is the present intention to keep the tidal basin eastward of the Napier mole as a reservoir to give bulk to the tidal waters, so as to maintain the force of the current that scours the harbour and keeps its channel clear. It is hoped that in the course of time the more shallow margins of the foreshore will be reclaimed; it is such portions that are the most noxious to health. The unwholesomeness of the neighbourhood of the marshy ground cannot be denied, but the evil resulting from the swamp, in the form of fever, is far less than might have been expected. The influence of the malaria might be restrained by planting belts of trees, judiciously chosen from those that thrive near the sea.

3. The rock of Kurachee and its neighbourhood is tertiary, and is composed of strata or beds of comminuted marine shells, alternating with layers of limestone, now arenaceous, now argillaceous, and with beds of a conglomerate consisting of rolled modules of foraminiferous limestone, and like the conglomerate that is seen in great mass near the top of the Bolan Pass, and probaly at intermediate places. At Munora, the Oyster Rocks, Clifton, and Gizree, the rock is scarped towards the sea, while its dip is north-westward. In creeks, such as the harbour, Chinnee, and Gizree creeks, the accession to the land from the sea is of mud, but there are sandy beaches west of Munora and west and south of Gizree, and the sand is siliceous with a large admixture of mica, altogether different in nature and economic value from the calcareous sand of Bombay, and apparently the detritus of granitic rock or of micaschist. There are low rocky hills at the eastern and the northern limits of the town land, but the rest of it is nearly flat, and in many places the rock is at the surface. This part of Sind is within volcanic range, as is shown by the hot springs issuing from the coralline rock in the crater-like hollow of Mugur Peer, eight or nine miles north of Kurachee; the mud springs on the border of the Beloooch territory to the westward, and the upheaval of the *Ullah-bund* and the submersion at Lukput, on the eastern side of the delta of the Indus, in the earthquake of the year 1819.

4. The abundance of easily wrought stone and of lime must be beneficial in affording, at a cheap rate, the means of having commodious and well built houses, as a defence against what may be hurtful in the climate.

5. The channel of the Lyaree river passes from north-east close by the old town, opposite to which it forms an island. The fall in the course of the river is so little, and the water is so scanty, except after heavy rain, that its bed is choked with sand, and any current there may be, is at other times subterranean. The sandy bed serves for the storage of fresh water, and numerous wells are sunk in it and in the gardens that line its bank. The water drawn from wells in the bed and banks of the Lyaree is much purer than is obtained from any other wells. Brackish water is abundant at Kurachee, and is, as regards salubrity, at some places too near the surface, as for instance at the gaol, where it is met at a depth of four feet. In some wells the water has a rise and fall corresponding with the flow and ebb of the tide. The well supplying the artillery plunge bath is an example of this, and it affords an illustration of the very considerable distance at which a well may drain the ground and receive from it the deleterious impurities with which the soil may be impregnated by those dwelling on it or depositing on its surface filth that may be carried downwards by the rain waters.

6. The subsoil in the neighbourhood of Kurachee is highly impregnated with saline matter, and its different beds vary much in the quality of the water they yield. It is said that it not unfrequently happened that a well that yielded tolerably good water in small quantity, when deepened with the view of obtaining a greater supply, had been spoilt by the influx of brackish water. Wells near one another vary in their products, and this is especially remarkable in those near the Lyaree. From a series of analyses of Kurachee waters by the chemical analyser to Government, it is found that the mean amount of solid contents of a gallon of water from two wells in the bed of the river was 28·28 grains, while from seven wells in gardens in the bank of the Lyaree the average amount was 70·35 grains, the quantities ranging from 50·26 grains to 129·50 grains. Away from the neighbourhood of the river there is a well beside the Rambagh tank that yielded 58·66 grains. Of the waters from 13 other wells none contained less than 84·63 grains in a gallon, and the average amount of saline matter was 772 grains. In those waters there were only minute quantities of organic matter detected.

7. It is not in the neighbourhood of Kurachee alone that this uncertain condition of the water yielding beds exists. The same uncertainty was found, from the analyses of the waters, to exist in the Muleer near Landee, about 10 miles from Kurachee, and in five of its tributaries. In one instance only was there no difference between the results of the examination of water drawn in the bed of the stream or watercourse and that drawn from its two banks: it was in the Jerinda branch. From each locality three samples, drawn from the bed and from each bank, were submitted to the analyser, and among three from one of the localities, one sample contained three times as much chloride of sodium as another. The water from the Muleer near the Landee railway station, that is below the point where it is joined by its tributaries, contained upwards of 50 grains of impurities in a gallon, and of these, 11 grains were of sulphates and 22 of lime and magnesian salts. None of the waters from those sources were such as should be considered good for drinking, and it is to be hoped that a purer water will be found for distribution and in sufficient quantity.

8. The water supply of Kurachee has for some years been under consideration. Several schemes have been proposed. One was to bring it by aqueduct from wells and galleries, 15 to 18 feet deep, in the banks of the Muleer about 16 miles distant, or above its junction with the Domb and Sokan. Another was to bring it from a reservoir to be formed, some miles more distant or near Dumlot, by a dam across an affluent of the same river where it passes through a gorge in the hills; this scheme embraced the construction of a reservoir to hold 16 months' supply to meet the contingency of drought, which is so frequent, and because the replenishing of the reservoir would depend on the uncertain local rain-fall. Another proposal was to bring water by canal from the Indus. Such a canal might subserve the purposes of irrigation in the first 40 miles of its course, but the engineer officer, who has investigated the scheme, finds that the heavy expense of constructing and maintaining the remaining 40 or more miles of canal would have to be borne for the sole purpose of supplying the town and cantonment, an expense beyond the present means of the municipality. There are at present two schemes under examination, one is a modification of the Muleer scheme, it being thought that a sufficient supply of water could be found in the sandy bed of the Muleer, six miles nearer than the spot originally examined, and below the junction of its tributaries. Water is there found close to the surface of the sand, which is said to be 12 or more feet deep, affording good storage. It is apparently the locality whence the samples of water above mentioned were brought. The other proposal that is under investigation, is to bring water from the Hubb river, a distance in direct line of 16½ miles. The Hubb is described as having its source not far from Kelat, and, at the spot whence it is proposed to bring water, as having at all times water in its rocky and stony bed; sometimes the water may be reduced to pools, but generally there is a stream. Even when in pools, these cannot be easily exhausted, and at present 800,000 gallons are, it is said, raised daily by pump for the purpose of irrigation, yet the water is found as plentiful as before the next morning. There are frequent freshets in the river from its feeders in the hills of Beloochistan, and thrice a year, at the end of December or beginning of January, the end of March, and the end of July or beginning of August, the water rises 12 or more feet in the river bed, and, owing to the great fall of six feet in a mile, rushes like a torrent. There seems to be no room to doubt the

the sufficiency of the supply. A ridge of hill lies directly between Kurachee and the site of the proposed dam, and it has yet to be ascertained, by levelling, whether a gradient can be found by which to lead the water to the town. The source of the water would itself give promise of sufficient purity, but this is not confirmed by chemical analysis of a sample which was drawn on the 24th December. It was found to be largely impregnated with saline matter, the total impurities in a gallon amounting to 75·53 grains, of which 40·14 were common salt and 27·76 were sulphates. There was only a quarter of a grain of organic matter. This analysis is very unfavourable to the prospect that was entertained of obtaining the supply from that part at least of the Hubb. Investigation should be made to ascertain the source of the saline impurities, whether they are brought by the stream from its sources, or, as is more likely, they are dissolved out of the substratum in which water is stored within a limited distance from the point whence the sample was taken. Samples from points higher in the river should be analysed. An abundance of good water is essential to the welfare and prosperity of Kurachee, and it may have to be brought even from the Indus.

9. Drainage is a necessary concomitant of a large water supply, and it should be duly provided.

10. No dependance can be placed on the local rain-fall for an adequate supply of good water; the appended Table shows the irregularity in the time and the quantity of the fall.

11. The scantiness of the rain accounts for the arid and bare aspect of the country. Where fresh water is applied to irrigation, the soil does not show any want of fertility. Were there a plentiful supply of water to allow of the cultivation of gardens and the watering of roads, there would be not only relief to the eye, by the substitution of verdure for the hoariness with which the fine white dust now covers the scanty euphorbia hedges and meagre parkinsonia and tamarisk bushes, that form the greater part of vegetation about the houses; but, as a dusty atmosphere retains more of the sun's heat than a clear one does, the dry temperature of the hot season would be considerably lessened by laying the dust, while the ground, when clothed with vegetation, would absorb less heat in the day-time and would give it out more freely at night.

12. The situation of Kurachee on the coast, with the open sea towards the south-west, is most advantageous, as the monsoon breeze from that direction cools the atmosphere and, with the clouds it brings, lowers the temperature. The heat otherwise on this the borders of the tropic (the latitude being 24° 51′ 9″) would be intense during the four weeks that the sun hovers within two degrees of being vertical, or the six weeks that, with hardly less power, it shines while lingering within four degrees of the zenith. The result of recorded observations as furnished by the Superintendent Government Observatory, Colaba, during the five years 1860 to 1864, shows the monthly average temperature to be—

—	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Minimum - - -	51·58	55·79	60·63	70·38	76·07	79·68	79·64	77·43	75·90	68·45	59·50	54·79
Mean - - - -	68·01	73·67	77·89	83·78	86·55	87·95	85·43	83·37	84·49	84·10	79·28	72·19
Maximum - - -	73·16	79·22	83·14	88·69	90·90	91·77	88·46	86·21	88·07	89·14	84·76	77·46

13. The direction of the wind in the different months of the year, as recorded during the five years 1860 to 1864, is shown in an appended Table. The westerly wind from off the sea is by far the most prevalent in the hottest seasons of the year, and in all the year the west breeze blows 162·2 days, and during the semester of the north-east monsoon, while the land wind from that point and the east blows during an aggregate of 45·0 days, it alternates with the north-west breeze that blows for 18·4 days. Viewing the whole year, the north-west wind blows during 52·0 days, and is next in prevalence to the west. A due southerly wind is the least frequent, its yearly aggregate being only 5·2 days; from the south-east it blows 9·6 days.

14. The results of the observations of the wind should be used as a guide in determining the aspect of dwellings and public buildings, so that they may be most fully benefited by the breeze in the hot season, and, on the other hand, in choosing the position for the disposal of what is offensive, so that the effluvia may be least frequently wafted over the dwellings by the wind.

15. The wide extended limits of Kurachee include scattered and distant villages and hamlets, which have not now been visited. There are others that, from their size and proximity to the large centre of population, require more particularly to be included in the general schemes of improvement; among those are Meeran, the Bagdadee Lines, which are the chief residence of labourers; the oil mills; the tanneries on the north side of the left branch of the Lyaree; Bhistee Wara, and the soldiers' bazaar to the northward of the cantonment.

16. The new part of the town, that stretches from the Napier Mole to the cantonment and along the sea shore, where laid out for building, has wide streets in which there is already a considerable number of spacious, well-built houses, many of which are of ornamental architecture. Besides these, there are railway buildings, mills, and public buildings, such as those of the Charitable Dispensary, the Indo-European Telegraph, Government House, and Frere Hall, a tribute of gratitude and respect to the former ruler of the province.

17. The old town of Kurrachee is on the east shore of the harbour, which at low tide presents an extensive surface of mud, that in former days had to be traversed by passengers in canoes dragged as sledges by the fishermen. The water way has been improved, and the jetties at the upper and lower ends of the mole, that joins Keamaree island to Kurachee, afford now facilities of landing at all hours. The old town is a densely built mass of houses, that stand on the accumulated rubbish of those that preceded them, and thus have a somewhat higher elevation than the surrounding ground. The irregularity of the narrow streets and lanes is so great as to baffle any attempt at a description of their direction, and the numerous winding and crooked blind alleys render the place a maze, that can hardly be explored without an experienced guide. The narrowness and crookedness of the passages hinder the free admission of the breeze to carry off the vitiated air and noxious exhalations of the ground, impregnated as it is with excrementitious matters, and shut out the sun's beams, which, if admitted, would help to purify all they shone upon. There are some new streets that have been added to the north-east side of the original town since the assumption of the Government by the British, and these are built in parallel lines, such are Napier Road, Puncham, Kuchee, Kemchund Streets, and Marriott Road on the east. Lala Brahmun Street, that leads into the town from the Lyaree, was improved some years ago, and is straight, and has a regular row of shops on each side, with a continuous bench of cut stone in front, under which is the side gutter for carrying off the rain water. These gutters appear to be choked, and to be a shelter for filth and vermin, and, as the massive masonry that covers them renders it troublesome to keep them clear, it would be well to remove it. Many of the old streets are paved, but the pavement has to be sought for in general under a coating of accumulated sand and dried mud, and when found it is seen to be much out of repair. Unless where the amount of traffic with wheeled vehicles renders it of importance that the streets should be macadamised, it is far better that the old custom of paving them should be revived. Pavement lessens the quantity of dust, and causes the storm-waters to flow off quickly so as not to penetrate into the ground, and there to aid the process of putrefaction in the organic matters stored in it, and which, if deprived of moisture, might lie dormant and innocuous. Pavement, if well laid, hinders the soaking of impurities into the ground, and it lessens the exhaling surface from which deleterious vapours or gases can rise. The organic impurities that fall on a pavement exposed to sunshine and fresh air, become oxidised and harmless without passing through those intermediate stages which are productive of poisonous gases, and which are gone through, when, underground and excluded from fresh air, they are supplied with moisture.

18. The municipality has not altogether abandoned the use of pavement, and is now about to pave, at least the middle of, a street of horse-shoe shape, that has been opened to a width of about 50 feet round the south-western and greater part of the town. The paving in the centre, which is to be depressed, is intended to carry off the storm waters, which, although of unfrequent occurrence, yet are sometimes very copious and rapid in their descent.

19. The ground-floor houses or huts on the outskirts of the town are built of sun-dried brick or mud with flat roofs, and often have little yards enclosed with low mud walls. The Bagdadee Waree and other villages and hamlets are mostly of this description of dwelling, but the suburb or quarter called Muchee Meeanee, on the south-west side of the town, is mostly of huts enclosed with matting. Most of the houses in the town are of two or more floors. Many of those in the newer parts are substantially built of stone and lime-mortar, and, being the property of merchants and dealers who have immigrated for the purposes of commerce, are like in design to the houses in Bombay or in the towns of Goozerat. The buildings of the Sindian inhabitants have the walls of all their floors made of wooden frame work, interwoven with the small rough wood of branches or young trees, and when being constructed they look like enormous crates. The interstices of this wicker-work are filled with clay mixed with chopped straw, and the terraced roofs are plastered with the same material. This kind of construction answers on the whole very well at Kurachee, where the rain fall is scanty, but, when heavy rain does fall, as it did in August last, it demolishes the walls, or melts them and leaves bare the frame work. Kurachee at the time of this visit had not recovered altogether from the ruin and destruction caused by the unusual down-pour of rain. The ruins that are not rebuilt within a reasonable time should be removed.

20. The blocks between the thoroughfares are sometimes an irregularly chequered collection of houses, with small unpaved courts and mazy passages. Sometimes the houses, although of great depth, are built back to back and side to side without any interval, and with only the front in which there can be any door or window to admit the light.

21. Were it not for the wind towers, or *badgeer*, that are in universal use, it seems impossible

impossible that human life could be maintained in such dwellings. Every house and hut has its wind tower rising above its flat roof, and with its opening directed to the south-west. Sometimes it is but two or three feet in height, and is shaped like a scoop or shovel. Sometimes it is big enough to be the doorway to the ladder or stair, which there is in every large house to give access to the terraced roof. The wind tower is used with the object of catching the cooling monsoon breeze to moderate the great heat that is experienced when the sun is near the tropic; but far more essential, although unsought, benefit must accrue from its performing at all seasons the office of an outlet for vitiated air. The remains of wind towers are seen in some of the old buildings of the cantonment. The contrivance does not appear to have been well understood by those who adopted them, and they must have been very inefficient. With the free perflation that is secured to all the more recent barracks and their subsidiary buildings, the wind tower is superfluous. In dormitories placed, as are some of those in the gaol, close to the leeward of a high wall, the wind tower would be useful, and, in the report on the condition of the gaol of this place, its more extended use has been recommended.

22. No amount of such ventilating openings could compensate for the want of free access for fresh air into the passages and courts and lower apartments of the houses, and the municipality should not delay to open straight, wide throughfares through the town. This should be undertaken systematically, and be carried out perseveringly. When the plan of the town that is now being prepared is finished, a project of such streets should be devised, and in the new Municipal Act, which has been applied for, the power which is now wanting should be obtained, to acquire the necessary ground, and also to enforce the building of houses in line. The new streets should cross at right angles, and should have directions south-west and north-east, and north-west and south-east, with a view to the freest admission of the breeze for ventilation, with the best arrangement for allowing of all sides of the blocks of building participating in the purifying influence of direct sunshine. By cutting main streets through the town in the directions mentioned, the houses, as they have in progress of time to be rebuilt, would assume corresponding aspects, and each block would eventually have a side exposed more or less directly to the sun shining from the east, the south, and the west, and would have only an angle, no side, turned to the sunless north.

23. The population is chiefly Mahomedan, but Hindoo and Moosulman habitations are much alike. The mass of the people gives evidence, in the condition of its clothing, of the scarcity of fresh water, and the difficulty of abstersion with brackish water.

24. The domestic habits that were discovered at this inspection are in several points prejudicial to health. Besides the living and sleeping in confined, imperfectly ventilated. rooms, the little courts are unpaved and are made the receptacles of sweepings and refuse, often having uncovered pits, into which liquids of the foulest description are thrown and left to sink into the ground. Sometimes in a corner of a ground-floor room there is a privy without a door and communicating with a cesspit, close to the foundation of the house, and situated either in the court or in the neighbouring street. The cesspit never has any trap to cut off its communication with the interior of the house, and the poisonous gases, rising from it, penetrate into all the dwelling and sleeping rooms. The cesspit is sometimes of masonry, or is excavated where the ground is rocky and slow to absorb the liquids, and in such case it is opened to be emptied, when it is so full that what is poured in regurgitates and remains on the floor of the privy. More usually the pit is absorbent, and its contents soak into the foundations and the surrounding earth, and some of these are never cleared out. One householder, who was questioned, said he had inherited the house, and ten years ago had rebuilt it, but the cesspit which had been in existence before he came into possession had never, to his knowledge, been opened for the purpose of being emptied.

25. Many of the inhabitants of the old town have their privy on the terraced roof of the house, and the sweeper visits it more or less frequently. This arrangement is said to be universal in Shikarpoor and other towns of Upper Sind, but there no sweeper is employed, all is left to the drying influence of the sun and air, and to the dispersing power of strong winds. At Kurachee the want of proper kinds of vessels was observed to be the occasion, in some instances, of some injury to the clay of the roof, but the house-top privy visited by the sweeper is incomparably less objectionable than that in the interior of the house and communicating with a cesspit. Unbuilt places, ruins, and even the streets, gave evidence that there were many who had no private convenience in their dwellings.

26. The keeping of cattle in houses and in adjoining confined, unpaved, courts or yards is very common, and is at Kurachee productive of greater nuisance than in any Indian town that has been inspected, owing to the air being much more offensively vitiated by the camel than by other domestic animals. The camel here takes the place of the bullock, not only in carrying loads, but also in the mill, and some of the premises visited were, to the unaccustomed senses, very revolting. The camels worked in low, dark sheds, and heaps of the decayed refuse of their food lay in the small court, and the ground was moist with the fluid excreta, that were poured into holes dug in it. Two of the mills that were seen were for grinding flour, which must have been contaminated with the powerfully offensive atmosphere in which the work was carried on.

27. The narrowness of the streets is a great impediment to thorough scavenging. There are comparatively few into which carts could be taken, and the removal of refuse can only be done in baskets or by camels or asses. There is no difficulty in disposing of filth; even night-soil is readily taken by the cultivators to manure their land. There are not many public latrines; those that were seen were at the soldiers' bazaar, and were merely small walled enclosures without seats and without pavement.

28. The municipality has removed from the town to the other side of the Lyaree some of the offensive trades, the distillery, the oil mills, and the wool washing. The site for wool washing has not yet, it appears, been finally fixed. The ground that has been marked out for the purpose is on the island, or rather what becomes an island, between the two branches of the Lyaree when the river is in flood, and lies between the new oil mills and the tanneries. The tanneries, which had been removed not long since from the town, have been complained of as offensive in this, their new, situation, by persons residing on the left bank of the Lyaree, and are consequently about to be again removed to a distance of several miles, northward. This experience gives rise to apprehension that the wool washing also would be found offensive during north-westerly winds, if carried on at the spot that has been marked out. Another place has been proposed, which is at a greater distance from the town, and lies north-eastward from it and northward of the cantonment. This place is near the bifurcation of the river and on the north side of all its branches. If this locality, which seems to be suitable, is finally chosen, the work should be confined to the ground opposite the right branch of the Lyaree, in order to avoid contamination of the bed of the left branch, which affords storage for the best drinking water that is obtainable at present. Any refuse thrown into the sandy bed of the river would soon find its way into wells, even were they a considerable distance lower in the course of the stream. The removal of the fishermen of the Muchee Meeanee quarter, at the south-west or windward of the town as regards the prevailing breeze, has been attempted, and now it is thought that their objections have been overcome, and a new village is being laid out in which raised foundations for the houses will be provided, and inducement will be given to the fishermen to adopt a more wholesome kind of dwelling than they have hitherto had. The completion of this scheme is greatly to be desired.

29. There are in the town many dyers' workshops, which might, with advantage, be removed altogether to the north of the Lyaree, where the water storage could not be contaminated by them. Distilleries and all works yielding noxious refuse should be at a distance from the south branch of the river.

30. There are several markets. At Muchee Meeanee there is a fish market in an octagonal building with four entrances. It is well paved and guttered within, but there is no provision made for its drainage. The water with which it is washed is thrown on the surrounding ground. It is very objectionable thus to impregnate the soil with organic matter, which will be eventually a source of unwholesome exhalations. There is another market at the south side of the town and beside the Bunder-road; it consists of three well-paved airy sheds, of which one is appropriated for beef and mutton, one for vegetables and fruit, and the third for fish, and it is in it that the *pulla*, when brought in its season from the Indus by railway, is exposed for sale. The ground around this market also is unpaved and undrained. There is a railed enclosure beside it, in which cattle are sold.

31. There is a square at Kara Durwaza, where carriers are allowed to halt with their camels. The place was seen to be nearly covered with mat huts and enclosures in a dirty condition. It would be better that such encampments should be in, or beyond, the suburbs, and that all available spaces, as well as streets, should be kept as reservoirs and channels of fresh air, to replace the air that is being constantly vitiated in the neighbouring houses.

There is, not far distant, another square where bales of merchandise are allowed to be laid. It retains the name of Koree from a tank or pool that was formerly there, and which was filled up and prepared for its present legitimate purpose. There is another market; it is the Cunyngham Market in the Sudur bazaar. It consists of tiled sheds of moderate height, and forming a rectangle; three are completed, and have been for some time in use; one for the sale of mutton, another for beef, and the third for vegetables and fruit. A fourth is being built for fish and poultry. The sheds are paved and are kept clean, but the court is unpaved, and there being no provision for drainage, the soil, and, as a consequence, the atmosphere over it, will in time become polluted.

32. The Sudur bazaar, which has for some years been under municipal rule, was closely inspected in connection with the cantonment, and its condition was mentioned in the report that was made on the military part of Kurachee. This bazaar is a small town laid out with regularity. Five wide streets run north-west and south-east, and are crossed by two wide streets and many smaller that run south-west and north-east. The ground, thus divided into rectangles, is closely built over in great part of its extent with tiled houses of different sizes and heights, but most of them have one or more upper floors. Many of the houses are large and substantially built. The rectangles, included between Elphinstone-street and Frere-street, are sub-divided by small streets that contain a very dense population. The streets, and, with few exceptions, the courts, were clean. The privies also were as clean as the sweepers could make them, and lime was freely used in many. The administration of the Conservancy establishment was found to be efficient.

33. There is here also the system of cesspools which exists in the towns, but it is far more

more general. There are a few common privies which have a common cesspit, into which all that is liquid, and all that is borne by the water that is used, flow. It is more usual for each house to have its own privy, and, as a matter of course, every privy has its cesspit in the street or a back alley close to the foundation of the house, or in a small court, or even in the veranda. The privy is in some instances carefully partitioned off from the rest of the house, but not unfrequently it is here, as in many houses in the town, in a corner of the lower room, and without a door of separation. In nearly all houses the waste-water pipe from the bathing-place, whether in the upper or lower floor, communicates directly with the cesspit, without break and without trap, and allows the poisonous gases of putrefying excrement continually to pervade the dwelling. Some of the cesspits are built, others are mere absorbment pits, dug in the ground and covered with slabs more or less loosely jointed. They are always used until, from the privy being flooded with filth, it is known that they are full and will admit no more. Leave is then asked to have the pit emptied, and a printed permit is given, and in it the number of days which the work will be allowed to occupy is specified. The time during which those of the neighbourhood and the passers-by are obliged to endure the grievous nuisance caused by the open cesspit, may be four days, if not more. Taking into account the very great number of cesspits that there are, it must be but seldom that there is not some of them in process of being emptied. But even when the pits are closed, the smell from the saturated ground in which they are is sickening. This was experienced at the inspection, when, although the morning was still, the air was cold and very dry, and much less favourable for carrying the effluvium than warmer air more loaded with moisture, would be. This condition of the soil is highly dangerous to health and life, not only in the contingency of an invasion of cholera, which, under such circumstances, would be rendered very virulent, but it will probably, if continued along with the overcrowding, produce a deadly fever such as prevails in Bombay, and has been very destructive in some overcrowded gaols and ships. Such a fever is not likely to be confined to those among whom it originates.

34. In the soldiers' bazaar likewise there are many houses that have cesspits, and the ground there also gives out a sickening odour. Measures should be taken, without delay, to abolish all cesspits in the Sudur bazaar, in the soldiers' bazaar, and in the old Town. In connection with the abolition of the cesspits, the inhabitants should be required to furnish their privies with vessels that will retain liquids, and it should be considered to be incumbent on the municipality to provide a sufficient number of tank-carts to visit every night all parts of the town to receive the filth.

35. The removal or effacing of the cesspits should be carried on diligently yet cautiously, and use should be made of deodorants, of which the liquid carbolic acid is perhaps the cheapest of those that are the most efficacious. When a cesspit is emptied, quicklime in large quantity should be thrown into it, and it should then be filled up with fresh mould, the earth that before covered it being carried away. If any epidemic fever or cholera should appear while the cesspits are being emptied, the work should, for the time, be intermitted, because the greater concentration of the poisonous emanations that arise from the open pits, than of those that come through the soil when they are covered, would give intensity to the disease.

36. The number of retail liquor-shops licensed in the Sudur bazaar is three; of which one is for European liquors, one for both European and country liquors, and one for country liquors only. In the soldiers' bazaar there is one shop for European liquors and one for native liquors.

37. There are no burials in the town; all burial-grounds there were summarily closed by the first ruler of the province, after it was taken possession of by the British. The burial-places are not registered, nor is there any record kept of the deaths with reference to different localities of the town. Graves of the depth of only four feet are allowed, a depth that is insufficient.

38. There is no census of the town that can be relied on. The population is estimated variously, but generally, at about 70,000. A census is very desirable as well as a mortuary register, as it is only by aid of them that any correct opinion can be formed of the insalubrity, or otherwise, of a quarter or street, and that measures can, with confidence, be taken for the amelioration of alleged evils.

39. The income of the Municipalty last year was 2,45,761 rupees. It was derived chiefly from house tax, wheel tax, water rate, markets, and slaughter-house, liquor licenses, land rent, and sale of right of the occupancy of land, fines, octroi duty, transit dues on merchandise, including cotton, wool, seeds, sugar, grain, and ghee.

40. The Municipality maintains a secretary and surveyor, who has the more immediate management of its affairs. In the Conservancy establishment there is a European inspector of nuisances. A charitable dispensary is supported, and grants-in-aid are given to schools.

41. The chief recommendations that have been made may now be repeated shortly—

(*a.*) To reclaim the shallower parts of the tidal foreshore, and especially those covered only at spring-tides. To plant belts of trees as barriers to malaria.

(*b.*) To obtain, whatever the cost of it may be, a supply of good water, and in sufficient abundance to allow of gardens being cultivated and the roads being watered. In the meantime to keep the bed of the Lyaree and its left branch, from which the least impure water is now obtained, free from pollution by distillers, wool washers, dyers or others.

(*c.*) To devise a scheme of drainage to be carried out on the introduction of the water supply.

(*d.*) When buildings are undertaken, to give to all single houses an aspect towards the prevailing wind. To open wide avenues through the town, and to lay out the streets, so that blocks of buildings may, to the greatest amount, benefit from ventilation by the wind, while at the same time they may have sunshine on all their sides.

(*e.*) To remove ruinous houses. To keep the paved streets clear of mud and sand. To repair the old pavement of streets, and to pave the streets and lanes that are to be made, as well as the existing ones that are to be maintained.

(*f.*) To cause all courts of houses to be paved. To cause all houses or courts in which cattle, and especially camels, are kept to be not only paved, but also drained and well ventilated. To have all houses where camels are kept, registered, and regularly inspected to ensure cleanliness. To have the circuit of markets paved and drained.

(*g.*) To abolish cesspits. To provide for the regular visits of tank carts to carry away liquid refuse and night soil.

(*h.*) To render it obligatory on all who build houses to provide privy accommodation. To supply the present deficiency with public latrines.

(*i.*) To carry out the scheme for the removal of the fishing village.

(*j.*) To regulate the occupation of houses, according to their size and the means of ventilation.

(*k.*) To register all burial grounds; to require graves to be six feet in minimum depth. To register all deaths, according to the locality or quarters of residence in the town, and to tabulate the deaths weekly, monthly, and yearly.

(*l.*) To obtain a census of the town.

A. H. Leith, M. D.,
Inspector General of Hospitals,
President, Sanitary Commission.

RESULTS of OBSERVATIONS on the Direction of the Wind during the Five Years, from 1860 to 1864, at the Meteorological Observatory at Kurachee, showing the Average Number of Days (or Decimal Fractions of Days) in each Month that it blew from each of the Eight principal Points of the Compass.

Direction.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
North - -	1·1	2·3	2·5	1·1	0·6	0·0	0·4	0·6	0·3	1·2	2·6	1·2	13·0
North-east - -	3·0	2·1	1·2	0·3	0·2	0·0	0·2	0·1	0·3	1·4	2·3	3·6	14·7
East - - -	11·1	3·8	0·8	0·2	0·1	0·2	0·1	0·0	0·5	1·2	5·3	9·2	32·5
South-east - -	1·9	2·5	1·3	0·0	0·0	0·1	0·4	0·1	0·1	0·5	0·5	2·2	9·6
South - -	0·4	0·9	0·0	0·2	0·9	0·5	0·1	0·0	0·1	0·3	0·9	0·9	5·2
South-west - -	1·6	1·5	3·5	1·7	4·3	5·2	4·0	5·4	3·3	2·3	2·4	1·6	36·8
West - - -	5·2	8·6	13·1	20·7	21·0	20·7	18·5	14·6	15·6	12·4	6·7	5·1	162·2
North-west -	2·2	1·9	3·8	3·4	3·0	2·7	6·3	9·3	8·9	6·6	2·7	1·2	52·0
Total - -	26·5	23·6	26·2	27·6	30·1	29·4	30·0	30·1	29·1	25·9	23·4	25·0	326·9
Calm - -	4·5	4·8	4·8	2·4	0·9	0·6	1·0	1·6	0·7	3·3	5·3	4·3	33·2
Observations omitted	-	-	-	-	-	-	-	0·3	0·2	1·8	1·3	1·7	5·3
TOTAL Days -	31·0	28·4	31·0	30·0	31·0	30·0	31·0	31·0	30·0	31·0	30·0	31·3	365·4

REPORT

ON

MEASURES ADOPTED FOR SANITARY IMPROVEMENTS IN INDIA, FROM JUNE 1869 TO JUNE 1870;

TOGETHER WITH

ABSTRACTS

OF

SANITARY REPORTS FOR 1868 FORWARDED FROM BENGAL, MADRAS, AND BOMBAY.

Printed by Order of the Secretary of State for India in Council.

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REPORT ON MEASURES ADOPTED FOR SANITARY IMPROVEMENTS IN INDIA, FROM JUNE 1869 TO JUNE 1870.

INDIA.

THE "Report on Measures adopted for Sanitary Improvements in India during "the year 1868, and up to the month of June 1869, together with abstracts of "Sanitary Reports for 1867 forwarded from Bengal, Madras, and Bombay," was transmitted to India in a despatch from the Secretary of State, No. 31, dated the 25th August 1869 (Sanitary Department).

To His Excellency the Right Honourable the Governor General of India in Council.

My Lord,

Paragraph 1. I herewith forward, for the consideration of your Excellency in Council, a "Report on Measures adopted for Sanitary Improvements in India during "the year 1868, and up to the month of June 1869, together with Abstract of "Sanitary Reports for 1867, forwarded from Bengal, Madras, and Bombay," forming the sanitary volume for the present year, in continuation of the Memorandum on Sanitary Measures, and Abstracts of Reports transmitted with the despatch of my Predecessor in Council, dated the 31st October (No. 30) 1868.

2. The abstracts given in the present volume are for the year 1867. They refer to the latest reports which have been received in this Office, with the exception of the Administration Report of the Calcutta Municipality for 1868 (dated 5th March 1869), to which allusion is made at page 5 of the enclosure, and an abstract of which will be given in conjunction with that of the Report of the Sanitary Commissioner with the Government of India for the same year. I consider it very desirable that this Annual Report should, if possible, be sent to this country at an earlier date than at present is the case, so that an abstract of the report of the immediately preceding year may be given in each annual sanitary volume.

3. With reference to the Despatch of your Excellency's Predecessor in Council (No. 9), dated 19th December 1868, I trust that the Cholera Map prepared, as far as practicable, in accordance with Dr. Goodeve's suggestions, may be transmitted in time for insertion in the Sanitary Volume for 1870; and also that when the necessary arrangements are carried out, additional tables may be given showing the sickness and mortality of officers in India.

4. It appears to me that it would, moreover, forward our knowledge of the causes of disease in India if tabular statements were given of the death rates of children born in India of European parents for various ages, such as—

Under one year.
One and under two years.
Two and under three years, &c. &c.

It would further be of importance to detail the causes of invaliding in the army.

5. Two hundred copies of the enclosed report will be forwarded for distribution *vid* Southampton.

(Signed) ARGYLL.

The Report was also forwarded to Madras and Bombay with the Despatches noted in the margin, and was presented to Parliament on the 8th of March 1870.

Madras, No. 13, 25 August 1869.
Bombay, No. 16, 25 August 1869.

A copy was sent to the Army Sanitary Commission at the War Office for any observations they might wish to offer on the subject. In their reply, dated the 26th January 1870, the Secretary to the Commission writes: "I am directed to acquaint "you, for the information of his grace the Duke of Argyll, that the Commission "have examined this report with much interest, and they are of opinion that both "report and abstracts have been drawn up with great care, and will be of essential "service to Indian Sanitary Improvement. They have only one suggestion to "make, provided it be practicable, namely, to bring the material of the report, as "nearly as may be, down to the date of publication. If the documents could be "obtained from India early in each year, and completing the information up to the "end of the preceding year, this would enable the India Office report and abstracts

" to present a completed annual survey of progress in India in each year. Except " this, the Commission have no suggestion to make in regard to the present " report."

A copy of this letter was forwarded to India in the Sanitary Despatch, dated 17th March (No. 6) 1870, but it will be seen that the suggestions of the Army Sanitary Commission, regarding the earlier transmission of the sanitary reports, had been anticipated in paragraph 2 of the despatch forwarding the abstracts to India. The result, however, as regards the Annual Sanitary Reports for 1868, has not been satisfactory. These Reports have hitherto reached the India Office the autumn of the year subsequent to that reported upon. For instance, the annual reports for 1867 were received in October 1868.

No. 31, 25 August 1869.

The first of the Reports for 1868 received was that of the Sanitary Commissioner with the Government of India, which did not reach the Sanitary Department at the India Office till 11th January 1870. It was, however, accompanied by a cholera map, and Dr. Cuningham's time had been much occupied by the cholera epidemic of 1869.

The report of the Sanitary Commissioner for Bombay, 1868, did not arrive till the 23d February 1870. This report is also accompanied by a cholera map, the preparation of which may have caused some delay.

The report of the Sanitary Commissioner for Madras, 1868, was not received till the 7th April 1870. There is no cholera map; it bears date 23d of June 1869, and no reason seems assigned for the more than usual delay in its transmission.

Abstracts are given of these three annual reports, as in the preceding volumes, and also of the Municipal Reports from Calcutta, Madras, and Bombay, for 1868. But as the value of these reports is much diminished by the delay in their transmission, it is proposed to notice shortly any leading points of importance which appear in the Monthly Proceedings for 1869 of the Sanitary Commissioners at the three Presidencies, which are regularly forwarded to England. The annual reports for 1869 will be mainly composed of the details given in these Monthly Proceedings, so that any notice now taken will be in anticipation of the abstracts for the succeeding year. But any such points now taken up can be simply alluded to, or passed over when they are again brought forward in the annual reports.

Cholera maps.

Dr. Edward Goodeve, late Deputy Inspector General of Hospitals, Bengal, in a letter dated 24th June 1868, recommended the submission, with the annual reports, of a map showing the prevalence of cholera in each Presidency during the year under review. A map has been forwarded with the report for 1868 of the Sanitary Commissioner with the Government of India, where the area covered by cholera is shown by a yellow tint, yellow dots indicating a few solitary cases. A map has also been forwarded with the Bombay report, intending to illustrate by intensity of shading, and by figures, the comparative prevalence of cholera in the various Talooka divisions in which it prevailed in the Bombay Presidency during 1868. This map is the nearest approach to carrying out Dr. Goodeve's suggestions. It is given at page 143. It appears that if there is any authority for cholera death at all, it must have some relation to time, and the map would become more practically useful if the dates could be inserted in such instances as they can be proved to be accurate. There might be difficulty in naming the exact *day*, but the weeks or months might perhaps be noted. Thus on the shaded part, 15–25 might be understood to indicate prevalence from or between the 15th and 25th week of the year, or 3–5 prevalence in March to May. The week indication would probably be as little troublesome as any, and more accurate. A shaded area left unfinished would announce that the dates are uncertain or diffused over the whole year. The data necessary for preparing the map of the Madras Presidency were not at hand, but a map is promised with the Report for 1869.

Influence of mountain climates on health of troops in India.

An extract has been forwarded from a letter addressed by Dr. Cuningham, Sanitary Commissioner with the Government of India, who visited England during the present year, to Sir J. Ranald Martin, giving very interesting information on the important subject of the sanitary influence of mountain climates in India on the health of troops.

Letter to Sir J. Ranald Martin, C.B.

On the breaking out of the Sepoy mutiny in India Sir Ranald Martin at once perceived that a vast augmentation of the European force must be made there; in fact that henceforward the garrison of our Indian possessions must be the white hand which had mainly won them. Upon this just view of the future of our Eastern empire he addressed the then Chairman of the Court of Directors of the East India Company, Mr. Ross D. Mangles, two letters of dates the 12th August

and the Ist December 1857. The first contained reasons of state, financial and sanitary, why all British soldiers available from the duties of the plains should be permanently cantoned in the hill regions of the country, urging the measure as a state necessity, and ending with a suggestion that a careful scientific examination of the mountain climates by competent persons be instituted by the Supreme Government in each of the Presidencies of India, "in order that this great sanitary problem may be solved in a conclusive manner."

But strange to say, the problem, with all its vast and beneficent connexions and consequences, remains unsolved to this day. Lord Canning, to whom the two representations by Sir R. Martin* had been officially transmitted by order of the Court of Directors, must have been too deeply engaged in measures immediately to preserve the empire, to command the time necessary for sanitary investigations, and the question has thus remained unnoticed up to this hour.

The second letter contained a detail of instructions to "such officers as the "Government of India may appoint to examine and report on the important "subject in question." From the above dates to the present day the resort to what are called *hill stations* has been conducted in a manner desultory, irregular, and unscientific; and in the absence of any proper examinations no just or sufficient conclusions have been arrived at in respect of real uses of the mountain climates, or of the relative advantages of the different elevations to be found in the various solitary mountains, those islands in the plains, and in the mountain ranges so abundantly dispersed over the vast area of India.

1st December 1857.

It was, therefore, with much satisfaction that Sir Ranald Martin received a letter, of which the following is a copy, from Dr. Cuningham, Sanitary Commissioner with the Government of India:—

"16 Manchester Street,
"My dear Sir R. Martin, March 27, 1870.

"Dr. Bryden, in his letter to me, writes, "I have sent to Government a "table showing the results for working parties in the hills during the past seven "years, apropos of the report on the working of the experiment in 1869. "The result thereon is that the death rate per annum is just over 4 per 1,000, "and this almost entire absence of climatic disease in deadly form is truly "astonishing.

"You could hardly desire," says Dr. Cuningham, "a stronger practical evidence "than this in support of the measures of prevention of disease which you have "for so long a time urged on the attention of the authorities in India and at home, "especially when it is coupled with the fact that during 1869 the mortality among "European soldiers in the Bengal Presidency, as a whole, has been 42·08 per 1,000.

(Signed) "J. M. CUNINGHAM."

When Sir Ranald Martin addressed the home authorities (1857) the mortality of the European troops (as stated subsequently in the report of the Royal Sanitary Commission in 1863) was and had been during 56 years of this century 69 per 1,000 per annum. That the removal to the hill ranges, everywhere to be found throughout India, should reduce the death rate to 4 per 1,000 per annum is indeed a most patent and wonderful fact. It is the greatest triumph ever achieved over the external causes of disease everywhere prevalent in the plains of Hindostan; and at the time of Sir R. Martin's proposal to remove the British soldier in the greatest proportion available from the duties of the plains to the mountains of India (that is, to the climates nearest to their native climates), he could hardly have ventured to hope for so grand a result as is here exhibited.

Lastly, it has always been maintained by Sir Ranald Martin, on his experiences while serving in Bengal, that a recourse to the mountain climates will not prove of much use in the cure of the diseases of India; indeed regiments sickened and debilitated on the plains have often found this to be the case. But healthy men, corps just arrived from England, will be preserved in health and vigour by being sent to proper hill stations.

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* On the occasion of these letters being addressed to the India House, Lord Herbert wrote as follows: "I am very glad indeed you have written your two able and excellent letters to the East India "Company, and I rejoice to see that Mr. Melvill has undertaken to forward them to the Governor "General of India. You could not render a greater public service at this moment."

(Signed) SIDNEY HERBERT.

In the Report of the Royal Commission to the Queen, of 1863, on the Sanitary Condition of the Indian army, they say:—"We are indebted to Sir Ranald Martin for having brought this subject prominently "before us, and also for having directed the attention of the Indian Government at home and abroad to "its importance."

INDIA.

It has been objected to the climates of the mountains by certain observers that they will not cure disease. They seem to be designed in India to render us a service unattainable, perhaps, even in the temperate climates of Europe, namely, that of preventing the occurrence of endemic disease as prevailing in the plains.

The question here briefly stated has had reference mainly to the prevalence of fever, dysentery, liver disease, and cholera, the four great epidemics of the plains, and the destroyers of the white race in India. These four diseases can hardly be said to exist to any fatal extent at certain elevations in the mountains, which, besides excluding the malarious diseases of the plains, offer peculiar aids to effective Medical Police.

And here we have to consider the influences of the habits of life of the British soldier, as well as the climatic influences. For instance, after the endemic causes mentioned, it has been found during the hundred years of occupation of the old open cantonments on the plains, and under the smothering ramparts of Mahomedan fortresses, and other unsuitable buildings, that the intoxicating and poisonous liquors furnished to the soldier from the bazaars, together with the temptations to contract enthetic disease everywhere offered to him, have gone far to swell up his death rate to 69 per 1,000 per annum. A well-chosen mountain station will checkmate both poisons, inasmuch as the Government has the ordering of the approaches to the station on the summit, and the few roads to it can be guarded by sentries.

It is only by such combined and comprehensive means that, according to Sir R. Martin, the prevention of disease in India can be promoted.

Weekly returns of mortality and meteorology from Calcutta, Madras, and Bombay.

In November 1869 the Registrar General requested he might be furnished with weekly telegrams from India, showing the following particulars for each of the cities of Calcutta, Madras, and Bombay :—

1. Total deaths for the week ending Saturday.
2. Temperature.
3. Rainfall in inches.
4. Deaths from prevalent diseases, such as
   - (*a.*) Cholera.
   - (*b.*) Dysentery.
   - (*c.*) Diarrhœa.
   - (*d.*) Fever.

It was suggested in reply, that the requirements of the Registrar General might be met if weekly statements relative to public health, &c. were forwarded regularly *by post* from the three Presidency towns, which, even from Calcutta, would arrive in four weeks from the date of despatch. This proposed arrangement was acquiesced in by the Registrar General. (*Letter*, 14th March 1870.)

Cultivation of sunflower in marshy districts.

A despatch was received from the Government of India, dated 14th December, No. 8, 1869 (Sanitary), forwarding correspondence relative to the cultivation of the sunflower plant (helianthus annuans), for the purpose of neutralizing the injurious effects of marshy exhalations. The attention of the Commissioner at Burdwan was attracted by an extract from a paper by a Mons. Martin, stating that the experiment had been tried with great success in the fenny districts near Roche Fort, and that the Dutch, who, from the peculiar nature of their country, have every opportunity of studying such phenomena, have a firm faith in this specific, asserting that intermittent fever, the scourge of the country, has totally disappeared from every district in which a fair trial had been given to it. The fact appears to be proved, but the *modus operandi* is uncertain, it being a disputed question whether the sunflower acts on the atmosphere merely like any other plant of rapid growth by the production of oxygen, or whether like the coniferæ it emits ozone, and thus destroys the germs, animal and vegetable, generally supposed to constitute the miasms which produce fever when present in the atmosphere in large quantities.

The Commissioner of Burdwan hoped that benefit might be derivable from this experiment by its application to the fever-stricken districts of Bengal.

The correspondence was forwarded to the Foreign Office, with a view of eliciting further information on the subject. M. Martin's paper could not be obtained, but a communication to Her Majesty's minister at the Hague was enclosed in a letter from the Foreign Office, dated 26 April 1870, a copy of which was forwarded to India in Sanitary Despatch No. 18, 16 June 1870. It does not appear that the sunflower has been planted in Holland with the special view to neutralizing marshy exhalations, and as regards India, further information was asked from the Dutch colonial authorities.

The Netherlands Minister of the Interior adds: " En citant l'exemple de ce qui a " eu lieu lorsque le lac de Haarlem a été rendu à la culture, que l'on n'a pas a " craindre les fièvres intermittentes si l'on a soin de planter de suite sur les terrains " desséchés du coyla, ou même des plantes sauvages telle que la 'cineraria " palustris.'"

Emigration.

A letter from the Colonial Office, dated 28th July 1869, transmitted an extract from a report by Dr. Bakewell, health officer of shipping in Trinidad, on the causes of sickness and mortality in Coolie ships, together with a report on the subject by the Emigration Commissioners, with a request that these documents might be forwarded to the Government of India for consideration. They were sent to India with Sanitary Despatch No. 32, 31st August 1869, and are given in the Appendix at page 193. Copies were also forwarded to the Governments of Madras and Bombay.

Madras, No. 18. Bombay, No. 14. 31 August 1869.

A reply has been received from the Government of Madras, who had appointed a Committee to consider the subject, whose report was enclosed. The Committee state that the description of Indian emigrant given by Dr. Bakewell does not apply to the class of persons who emigrate from Madras, and that emigration has not been attended with any unusual mortality. Of 9,717 emigrants who proceeded to the Mauritius between 1864–65 and 1869–70, not more than 25 deaths occurred, and of these 3 fell overboard accidentally and 4 died of cholera. Of the 3,120 emigrants who proceeded to Natal there was no return. Of the 3,899 emigrants who proceeded to Réunion the number of deaths did not exceed 10. Of the 651 emigrants who proceeded to Guadaloupe 33 died, but 30 of the deaths were from cholera.

Public despatch, No. 8. 25 March 1870.

The Committee endorsed Dr. Bakewell's recommendation for an alteration of the diet scale, that wheat flour should be substituted for a portion of the rice, that fresh meat should be issued twice a week, and that the allowance of dholl should be reduced. The extra cost of these alterations was estimated at 3 Rs. 2 annas per 100 men.

The Committee would leave to the judgment of the Medical Superintendent the issue of spirits and opium to habitual opium eaters, and, considering the moderate mortality that has attended emigration operations at Madras they do not advise the adoption of an increase of 15 feet superficial space per emigrant, as recommended by Dr. Bakewell.

A form of return is appended which the Committee recommend should be furnished by all British consuls and governments from the ports at which emigrants from Madras, Pondicherry, or Karical are landed.

The government of Fort St. George express their entire concurrence in the views expressed by the Committee.

The question of an improved dietary was again brought forward in a letter from the Colonial Office of the 25th August 1869, quoting the case of 454 emigrants from Calcutta to British Guiana, who are said to have arrived in very poor condition, " like healthy skeletons," wanting in muscle and physical strength, and the women worse than the men. The " Walmer Castle " is described as well ventilated and in in every way adapted for the service, and the Emigration Commissioners considered the case proved the necessity of a more nutritious dietary.

The Bombay Government (Despatch dated 4th December, No. 40, 1869, Public Department), enclose a report by the Protector of emigrants, with a list of provisions suitable for a voyage to the Mauritius, to which place emigration from Bombay has been confined. Government concurred in the views expressed by this officer, but considered that wheaten flour might be advantageously substituted in all voyages for the ration of rice for emigrants proceeding from those parts of India in which rice is not the ordinary food of the peasantry, and that a daily ration of spirit (good arrack) might be added with advantage to the present provision scale.

The space already allowed on board is considered sufficient for a passage of five or six weeks.

Dr. Bakewell's conclusions are generally admitted to be just and sound, but it is not considered advisable that the transport of emigrants should be confined to one responsible firm. The Protector of emigrants is decidedly averse to the conveyance of emigrants becoming a monopoly.

The Government of India, in their despatch dated 17th May (No. 7) 1870, state that Dr. Bakewell's suggestions are still engaging the attention of the officiating Protector of emigrants and the Medical Inspector, with the view to a well-considered revision of the dietary scale. As any proposed change cannot be carried into effect before the next emigration season, the Lieutenant-Governor of Bengal complied with an application from the Protector of emigrants to be allowed sufficient time to do the

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work thoroughly, and considered it desirable to await the complete report promised on the subject.

Questions regarding subsoil drainage, &c. laid before the Army Sanitary Commission by Dr. Cuningham.

In the beginning of the present year Dr. Cuningham, Sanitary Commissioner with the Government of India, visited England on three months privilege leave. Dr. Cuningham placed himself in communication with the Army Sanitary Commission, in order to obtain an expression of their views on certain practical matters connected with the sanitary improvement of Indian stations. A paper given at page 199 of the Appendix has been submitted to the Secretary of State, showing the nature of these points as embodied in written questions prepared by Dr. Cuningham, together with the replies of the Commission, and copies have been forwarded for distribution in India.

Dr. Cuningham left England for Calcutta on the 1st April last.

Contagious fever in emigrant ships.

Copies have since been transmitted from India of "Instructions for the guidance "of Surgeon Superintendents of Government Emigrant Ships regarding Contagious "Fever, and the precautions which should be adopted to prevent its spread," by Dr. Cuningham, and have been forwarded to the Colonial Office for the information of the Board of Emigration.

Dr. Hewlett's sanitary tour.

At the end of August 1868, Dr. T. Gillham Hewlett, Health Officer of Bombay, arrived in England on sick leave, his health having broken down under his work at the end of the hot season of 1868. From October to February Dr. Hewlett studied at the Army Medical School at Netley, and from February to July 1869 worked with Dr. Letheby in his laboratory. In July he gave evidence before the Royal Sanitary Commission, and read a paper before the British Medical Association at Leeds, on the sanitary state of Bombay. Dr. Hewlett solicited the permission of the Secretary of State to visit, at the expense of Government, such towns as Mr. Rawlinson recommended, where sanitary structural works on the latest improved principles are being carried on, especially with reference to works of drainage, water supply, and sewage irrigation. Dr. Hewlett's request was complied with, on the usual condition of his submitting a report of his sanitary tour. Dr. Hewlett submitted a very valuable and able report in October 1869, which was printed by order of the Secretary of State, and copies forwarded to India. As Dr. Hewlett devoted his attention more especially to such points as he considered applicable to India, his report is reprinted and given in the Appendix to this volume.

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Dr. Hewlett returned to Bombay in November last (1869).

Quarantine station at Bab-el-Mandeb.

The Ottoman imperial steamer "Rethimo" left Constantinople in January 1870, having on board the Turkish Sanitary Commission charged with the organization of quarantine to be levied in the neighbourhood of Bab-el-mandeb. A letter from the Political Resident at Aden, dated 9th June 1870, states that the Sanitary Commission for Constantinople have selected Shaikh Said (Bab-el-mandeb) for the quarantine and lazaret harbour in preference to Hissan Ghorab; this was arranged by a conference held at Hodeida.

Water analyses.

Dr. Macnamara's fourth and fifth reports on the analyses of potable waters in the Bengal Presidency have been sent to England and submitted to the Army Sanitary Commission; their memorandum in reply, which fully reviews the reports, is given at page 260 of the Appendix.

In consequence of a difference of procedure in Dr. Macnamara's scheme for the analysis of water, and in the notes by Dr. Angus Smith, printed in the Appendix to last year's Sanitary Blue Book, Dr. Macnamara, who is at present in England, expressed a desire to be put in communication with Dr. Smith, and a meeting was arranged between these gentlemen at Manchester in March last, since which time Dr. Macnamara, in conjunction with Dr. Angus Smith, has been engaged in the preparation of a uniform method of analysis of water in India, and it is understood that the preparation of the scheme is already far advanced. On completion the scheme is to be communicated to Dr. Parkes, professor of hygiene at Netley, as that gentleman will have to teach the new plan of analysis to the students at Netley before they proceed to carry it out in India. The Army Sanitary Commission (letter dated 8th July 1870) consider that when the plan is agreed to, it would be desirable that the Government in India should issue it authoritatively for the guidance of all officers engaged in water analysis throughout the East: "Uniformity of method "and uniformity of tabulation of results are indispensable for a proper comparative "knowledge of Indian waters."

Dr. Normandy's

A sample of Dr. Normandy's patent marine aerated fresh water was submitted to Army Sanitary Commission, and a memorandum by the Commission on the merits

of Dr. Normandy's system, and the possibility of introducing his apparatus into Indian military stations, is given at page 263 of the Appendix.

patent fresh water.

A cholera epidemic appeared in the North-western Provinces in the month of March 1869, lasting till October, when it was reported that cholera had almost entirely ceased in all parts of the Bengal Presidency. A report of all the cases up to the 15th October showed a total of 966 Europeans (including men, women, and children) who had been attacked, and 630 who died of the disease. The native troops suffered very considerably in the Peshawur District.

Cholera epidemic in Northern India, 1869.

Proceedings for November 1869.

The papers connected with this epidemic were forwarded to the Army Sanitary Commission for comment, who in their reply, dated 26th January 1870, express a hope that the causes of the high death rate will be elucidated during the inquiry into cholera now going on in India, and insist on the necessity of improving the sanitary condition of the stations where this lamentable mortality occurred.

15 March 1870.

With reference to the great and constantly recurring mortality among troops stationed at Peshawur, the Commission again call attention to facts already stated as to the unwholesome condition of the water supply and the damp state of the subsoil, arising from the manner in which water is conducted in open ditches over the cantonment. These defects, together with a malarial state of the atmosphere, appear to the Commission to indicate removal of the troops to a more healthy locality, such as Cherat, which had been well reported of, as the readiest method of protecting the health of troops at present.

With reference to the condition of the stations, the Commission considered that it might be desirable to draw up a brief statement of the points to which attention might be advantageously directed in dealing with the stations generally, in reference to their susceptibility to outbreaks of cholera.

No. 5, 17th March 1870.

Copies of these communications were forwarded to the Government of India in the Despatches noted in the margin, with a request that the suggestions of the Commission should meet with careful consideration.

No. 15, 12 May 1870.

A printed set of questions had been issued by the Sanitary Commissioner with the Government of India, for British and Native troops, to which medical officers were required to send replies. With regard to these and similar questions, the Army Sanitary Commission were of opinion, that while the inquiry into cholera should be left to shape itself in India, they would suggest that for the sake of uniformity, any proceedings taken for carrying out the "Instructions" already prepared by the Commission should depart as little as possible from them. These "Instructions" were drawn up so as to limit the labour of observers as far as possible. The different portions of the "Instructions" were also arranged so as to check each other when the observations come to be reduced for use. But these essential points may be rendered nugatory if Medical Officers are called on to fill up other sets of questions having no special relation to the scientific departments of the inquiry.

Appendix to Sanitary Report, 1869, page 181.

In August 1869, the Sanitary Commissioner with the Government of India was directed to proceed at once to the cantonments and camps where cholera was then prevalent, with a view of making a thorough investigation of the origin, spread, and direction of the epidemic, and of the measures, prophylactic and sanitary, taken to mitigate and check the calamity. Dr. Cuningham was to supply a complete history of the epidemic as soon as the requisite materials could be collected.

Among the papers is an interesting memorandum by Dr. Bryden, containing views on the distribution of cholera similar to those in his larger work on the same subject. The following tables are contributed by Dr. Bryden.

Cholera of 1869. European Army. (January to November.)
Died per cent. of treated.

Men - - - -	63·52
Women - - - -	61·96
Children - - -	75·18
Of total strength - -	64·87

N.B.—Cases of choleraic diarrhœa are reckoned as cholera.

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EUROPEAN TROOPS, 1869.

STATEMENT showing the ADMISSIONS from CHOLERA up to 1st November 1869.

4. *Men, Women, and Children.**

* Exclusive of Officers and their families, and Staff Sergeants.

STATIONS.	Strength as at 30th June.	NUMBER OF ADMISSIONS IN EACH MONTH.										Total Admissions of the 10 Months.	Total Deaths of the 10 Months.	Died per 1,000 of the Strength.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.			
Chinsurah Depôt	47	–	–	–	–	–	–	–	–	–	–	—	—	—
Fort William	1,138	–	–	–	–	–	–	–	–	–	–	—	—	—
Dum-Dum	646	–	–	–	–	1	–	–	–	1	–	2	—	—
Barrackpore	605	–	–	–	1	–	–	–	–	–	–	1	1	—
Berhampore	208	–	–	–	1	–	–	–	–	–	–	1	1	—
Total	2,597	–	–	–	2	1	–	–	–	1	–	4	2	·77
Hazareebaugh	928	–	–	–	–	–	–	–	–	–	1	1	1	—
Dinapore	1,083	–	–	–	–	–	1	1	1	–	–	3	—	—
Chunar	60	–	–	–	1	–	–	–	–	–	–	1	—	—
Benares	904	–	–	–	–	–	–	1	2	–	–	3	2	—
Fyzabad	1,265	–	–	–	–	–	–	–	24	4	–	28	20	—
Rae Bareilly	289	–	–	–	–	–	–	–	–	–	–	—	—	—
Lucknow	3,211	–	–	1	–	–	1	5	115	–	–	122	97	—
Seetapore	700	–	–	–	4	6	–	–	–	–	–	10	7	—
Futtehghur	266	–	–	–	–	–	–	–	–	–	–	—	—	—
Cawnpore	1,306	–	–	–	–	–	2	12	13	–	–	27	17	—
Allahabad	1,235	–	1	32	14	20	26	11	44	–	–	148	102	—
Total	11,247	–	1	33	19	26	30	30	199	4	1	343	246	21·87
Shahjehanpore	564	–	–	1	1	–	–	–	–	–	–	2	—	—
Bareilly	939	–	–	–	–	–	–	–	1	–	–	1	1	—
Moradabad	384	–	–	–	–	–	–	–	–	–	–	—	—	—
Roorkee	463	–	–	–	–	–	–	–	–	–	–	—	—	—
Meerut	2,019	–	–	–	–	–	–	–	–	15	4	19	14	—
Delhi	456	–	–	–	–	–	–	–	–	–	–	—	—	—
Muttra	559	–	–	–	–	–	–	–	–	–	–	—	—	—
Total	5,384	–	–	1	1	–	–	–	1	15	4	22	15	2·78
Agra	1,029	–	–	–	–	–	1	–	–	–	–	1	1	—
Morar	1,075	–	–	–	37	14	4	2	79	5	2	143	89	—
Gwalior Citadel	306	–	–	–	–	4	1	–	8	–	–	13	9	—
Seepree	162	–	–	–	–	–	–	1	3	1	–	5	5	—
Jhansi	761	–	–	–	–	–	–	–	52	5	–	57	9	—
Nowgong	227	–	–	–	–	–	3	–	5	1	–	9	6	—
Saugor	1,133	–	–	–	1	29	1	4	42	–	–	77	51	—
Jubbulpore	818	–	–	1	3	2	1	4	4	–	–	15	12	—
Total	5,511	–	–	1	41	49	11	11	193	12	2	320	182	33·03
Umballa	1,717	–	–	–	–	–	–	–	–	–	–	—	—	—
Jullundur	956	–	–	–	–	1	–	–	1	–	–	2	2	—
Ferozepore	1,148	–	–	–	–	–	–	–	1	–	–	1	1	—
Mooltan	1,131	–	–	–	–	–	1	–	–	–	–	1	—	—
Dera Ismael Khan	101	–	–	–	–	–	–	–	–	–	1	1	1	—
Sealkote	1,509	–	–	–	–	–	–	–	–	–	–	—	—	—
Umritsur	144	–	–	–	–	–	–	–	8	1	–	9	7	—
Fort Lahore	75	–	–	–	–	–	–	–	–	–	–	—	—	—
Meean Meer	1,268	–	–	–	–	–	–	–	–	–	–	—	—	—
Rawulpindee	1,745	–	–	–	–	–	–	–	–	–	–	—	—	—
Campbellpore	511	–	–	–	–	–	–	–	–	–	–	—	—	—
Attock	183	–	–	–	–	–	–	–	–	–	–	—	—	—
Nowshera	612	–	–	–	–	–	–	–	–	6	–	6	—	—
Peshawur	2,129	–	–	–	–	–	–	–	–	359	15	374	240	—
Invalids marching in the Punjab	—	–	–	–	–	–	–	–	–	–	1	1	1	—
Total	13,229	–	–	–	–	1	1	–	10	366	17	395	257	19·42
Darjeeling	235	–	–	–	–	–	–	–	–	–	–	—	—	—
Nynee Tal	531	–	–	–	–	–	–	–	–	–	–	—	—	—
Landour	285	–	–	–	–	–	–	–	–	–	–	—	—	—
Chuckrata	954	–	–	–	–	–	–	–	–	–	–	—	—	—
Jutog	102	–	–	–	–	–	–	–	–	–	–	—	—	—
Subathoo	1,025	–	–	–	–	–	–	–	20	8	–	28	19	—
Dugshaie	1,069	–	–	–	–	–	–	–	–	–	–	—	—	—
Kussowlie	474	–	–	–	–	–	–	–	–	–	–	—	—	—
Kangra	81	–	–	–	–	–	–	–	–	–	–	—	—	—
Dhurmsala	110	–	–	–	–	–	–	–	–	–	–	—	—	—
Road-making Detachment	1,345	–	–	–	–	–	–	–	–	–	–	—	—	—
Murree Depôt and Family Camp	687	–	–	–	–	–	–	–	–	–	–	—	—	—
Total	6,898	–	–	–	–	–	–	–	20	8	–	28	19	2·75
On the march	—	–	1	–	–	–	–	–	–	–	–	—	1	—
Bengal Presidency	44,913	–	2	35	63	77	42	41	423	406	84	1,113	722	16·07

Three very valuable Reports on cholera have been forwarded from India during the present year (1870), and have been submitted to the Army Sanitary Commission for consideration and remarks.

Reports on cholera.

A report on epidemic cholera in the Bengal Presidency, 1866–68, with its relations to cholera of previous epidemics, was submitted by Dr. J. L. Bryden, Statistical Officer attached to the Sanitary Commissioner with the Government of India. This report, and the theory advanced by Dr. Bryden regarding the law of movement of cholera, is very fully reviewed in the memorandum by the Army Sanitary Commission, given at page 265 of the Appendix. The view held by Dr. Bryden, at which he arrives through statistical data, is that there is a movement of epidemic cholera independent of all conditions. A district enclosed by a line drawn along the 86th meridian of E. longitude, from the mouths of the Mahanuddy to the roots of the Himalaya, and another line parallel to this, drawn from the N.E. angle of the Bay of Bengal to the Himalaya, extending over an area of about 122,500 square miles, is, in Dr. Bryden's view, the perennial home of Indian cholera, where it always exists in its endemic condition, appearing and disappearing at different times and at different seasons. From this endemic area spring up those "*bodies of cholera*" which overflow the boundary from time to time, invading at last the regions of Asia, Africa, and Europe which happen to be in their course, and the *materies* of cholera, whichever it may be, has a period of growth, existence, decay, re-vitalization and death, these states being under the influence of time, place, and atmospheric conditions.

Dr. Bryden's report on cholera.

A further communication from Dr. Bryden has been forwarded by the Government of India in Sanitary Despatch (No. 8), 20th May 1870, bringing to notice the appearance of epidemic cholera towards the end of October last on the eastern coast of Africa, and an outbreak at Zanzibar which commenced on the 20th November, and pointing out the probability of its spreading to Europe.

This appearance of cholera on the eastern coast of Africa was anticipated in Dr. Bryden's report in relation to the history of the epidemic cholera of 1868 and the spring of 1869, and its significance defined. At that time no advance of the epidemic cholera of 1868–9 beyond the limits of Hindostan had occurred, although the movement was regarded as imminent.

Paragraph 157.

"Following the epidemic movements of cholera in Bengal in June and July, it was reported to the Government of India that cholera invading Persia had committed great ravages at Shiraz and Ispahan, and while still existing in northern Persia had entirely ceased elsewhere about the middle of August. The cholera of this advance appears to have been felt also in southern Russia, for in July a few cases occurred at Kieff. The disappearance of this cholera in August is (Dr. Bryden believes) the homologue of the disappearance which, towards the end of August, occurred over an enormous tract in the Gangetic and Central Provinces."

From anticipations founded on parallel events in the epidemics of 1856 and 1861, Dr. Bryden remarked on the probability of a further epidemic movement of cholera over northern India in the first week of September, and this movement did occur, and he was disposed to believe that the cholera of the first week in September was a cholera truly invading an unoccupied area, and that this invading cholera, which in the Meerut district and in southern Russia dates from the same week, was the cholera of one and the same movement, and were beyond question due to the cholera of the same epidemic.

In the light which Dr. Bryden reads parallel history, he considers that the epidemic now in progress has still before it (3d February 1870) a vital existence of at least two years, since it was in April 1868 that its movement from out of the endemic area occurred. That about the 12th May indications of the reappearance of cholera might be looked for in the districts of the northern epidemic route, the tract south of the Jumna, Agra, and Gwalior; that in the central provinces cholera would be present in nearly every district, commencing in March and April; and that in the event of the spread to Europe of this cholera and that present in southern Russia, persistence through 1870 and 1871 may be expected.

A copy of this letter has been communicated to Dr. Dickson, British delegate to the Board of Health at Constantinople.

The report on the treatment of epidemic cholera by Dr. John Murray, Inspector General of Hospitals, Bengal Medical Department, was also submitted to the Army Sanitary Commission, whose "Remarks" are given at page 268 of the Appendix.

Dr. Murray's report on cholera.

Attached to Dr. Murray's report are the replies given by 500 medical officers who have seen cholera in all parts of India, to special questions addressed to them by Dr. Murray.

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Report on cholera epidemic of 1868. Dr. S. C. Townsend.

The report on the cholera epidemic of 1868, by Dr. S. C. Townsend, sanitary commissioner for the central provinces and Berars, discusses the conditions under which cholera presented itself in his district, mainly, from a special hypothetical point of view, viz., that cholera is a specific poison diffused chiefly, if not solely, by human intercourse; that it was brought into the district from elsewhere, and was carried about afterwards by the people, certain personal and local favouring conditions being required before the contagion can take effect on a population.

The memorandum by the Army Sanitary Commission on Dr. Townsend's report is given at page 270 of the Appendix.

Epidemic fever in Lower Bengal.

A letter was addressed to the India Office by Dr. John Sutherland, formerly Deputy Inspector General of Hospitals, Bengal, dated the 10th June 1869, on the subject of "the causes of the epidemic fever at present prevalent in Lower Bengal; "the means to be adopted to arrest its progress; with remarks on the health of the "people in districts of India irrigated by canals, and the necessity of protecting "the inhabitants of such localities from excessive subsoil dampness, &c." This letter, which is given in extenso in the Appendix at page 272 was forwarded to India in Sanitary Despatch, No. 28, dated 15th July 1869, with a request that the subject of a calamity which appeared from the proceedings of the Government of Bengal to have assumed such proportions as to occasion considerable anxiety, might receive the careful consideration of the Governor General in Council and of the Lieutenant-Governor of Bengal, who were to forward their views upon the subject in detail to the Home Government.

A reply has been received in a despatch from the Government of India, dated the 3d June last, No. 9, giving cover to a note by the officiating Under Secretary to the Bengal Government, containing a complete review of the history of this fever, which appears first to have been brought to the notice of Government by some remarks by the British Indian Association at the close of 1861.

The papers have been forwarded to the Army Sanitary Commission, but at too recent a date (18th July 1870) to have received any remarks from the Commission in reply.

History of native army of Bengal for 1868.

The Government of India transmitted in their Military Despatch, No. 409, of 14th December 1869, six copies of "A Sketch of the Medical History of the Native "Army of Bengal for 1868," by Surgeon-Major J. T. C. Ross. This was acknowledged by the Secretary of State in Despatch, No. 19, 7th July 1870, concurring with the Government of India in regarding the sketch as a valuable contribution to our knowledge of the sanitary condition of the native army, and viewing with satisfaction the arrangements that had been made for the regular publication of general annual reports of the medical administration of the Bengal Presidency. It was considered that similar reports should be obtained from the other Presidencies.

The Army Sanitary Commission, to whom a copy of the work had been forwarded, considered that it presented the first connected accounts submitted to them of the sanitary condition of native regiments, and of stations, barracks, and hospitals occupied by them. The reports of the different medical officers from which the sketch is compiled, state without reserve the defects in sanitary arrangements, accommodation, diet, water supply, and show an enlightened appreciation of measures for preserving the health and efficiency of troops. The Army Sanitary Commission concur as to the advantage of publishing similar reports annually, and in the appreciation of the manner in which Surgeon-Major Ross had made the abstracts, and they strongly recommend the improvements suggested by the medical officers to the consideration of the authorities in India.

The sketch also contains some interesting medical detail concerning the Abyssinian expedition, and an important paper by Assistant-Surgeon Centre on the topography of Peshawur Valley.

Report on sanitary works in Turkey, by Colonel Gordon.

Colonel Gordon of the Royal Engineers has recently returned from Turkey, where he has been engaged since the date of the Crimean war in carrying out sanitary works in Turkish buildings. The Army Sanitary Commission considered it would be advisable to obtain from this officer a brief account of the works which had been found practically applicable to eastern habits, and that the experience so gained might be useful in dealing with similar works in India. Extracts from Colonel Gordon's reports were forwarded by the Army Sanitary Commission (Letter dated 15th June last) for the information of the Secretary of State, and for transmission to India (Despatch).

These extracts are printed in the Appendix at page 274.

In the Sanitary Despatch No. 24, dated 30th July 1868, the administrative Report of the Calcutta Municipality for 1867 was reviewed, and the attention of the Governor General in Council was attracted to certain paragraphs in the Report on the subject of conservancy and disposal of nightsoil, the Secretary of State desiring to be informed whether it was proposed to take any special action in connexion with the statements and suggestions contained in the report.

Disposal of nightsoil, Calcutta. Report by Dr. D. Smith.

Dr. David B. Smith, the Sanitary Commissioner for Bengal, in whose hands the subject was placed by the Government of India, submitted a report, dated 10th of March 1869, on the drainage and conservancy of Calcutta, with a scheme for the better disposal of the nightsoil.

Dr. Smith's report was communicated to the justices of the peace for the town of Calcutta, and was carefully considered by them, in conjunction with their Engineer and the Health Officer. It was considered impossible to give effect to Dr. Smith's recommendations, which were considered simply a system of dry-earth conservancy, involving an enormous annual expenditure; moreover, the present drainage system of Calcutta was designed for the purpose of disposing of the nightsoil as well as to secure the effective drainage of the whole city; it seemed, therefore, hardly expedient to entertain any other scheme until it could be proved that the sewers constructed could not be made use of for the purpose.

Dr. Smith's report was transmitted to England in Sanitary Despatch No. 4 of 1870, dated 8th February, and was submitted to the Army Sanitary Commission, who (Letter dated 8th August 1870) considered it unnecessary to discuss Dr. Smith's proposal for removing the sewage of Calcutta on account of the great cost it would involve.

With regard to a proposal placed before the Justices by their chairman, Mr. S. Hogg, and adopted by them, of collecting the nightsoil of the native town and carrying it to a line of sewer connected with the general sewerage of the city, into which it is to be emptied and washed away by water, the Army Sanitary Commission do not consider this proposal as being one for sewering or draining this district of Calcutta, neither does it appear to be so intended.

"Viewed simply as a means of washing away the nightsoil, it would, if carefully worked, be preferable to the existing practice of throwing the nightsoil into the river; but the Commission regret that the great cost of the works already constructed for sewering of a part of Calcutta should render it necessary to resort to so imperfect an expedient."

Mr. Hickey's system of carbonization of sewage.

Mr. Gilbert Hickey's system of utilizing sewage and converting it into gas was submitted to the Army Sanitary Commission. In their letter dated 17th March 1870, they state that "the destruction of sewage by fire is one of the oldest methods "of disposing of it, and has been used in India."

"The proposal in Mr. Hickey's pamphlet is to collect the sewage with as little "nuisance as possible, and to throw it into gas retorts to be converted into car-"buretted hydrogen for illuminating purposes." "It does not appear that trials on "any large scale have been made of this process; but even if it were as successful "in the production of useful gas products as its proposer believes, the question of "the drainage of Indian stations would be left very much in its present unsatisfac-"tory state, and would be open to the same remarks as those already made by the "Commission on the Dry-earth sewage system."

The chemical examiner at Bengal had been directed (8th Sept. 1869) to analyse the gas, in order to ascertain whether it is likely that it can be used to advantage, and what proportionate saving in fuel may be effected by using the gas and residue as fuel.

The Bengal Government postponed further trial of the scheme till the result of this inquiry was known.

Uniform system of mortuary statistics in India.

A memorandum by the Army Sanitary Commission entering fully into the details of this important question is given at page 277 of the Appendix, and has been transmitted for the information of the Government of India in reply to their despatch dated 11th January (No. 1) 1870, forwarding correspondence on the subject of recording mortuary statistics on a uniform system throughout British India. The new system proposed by the Indian Government was to be brought into operation from the 1st July 1870, and applied only to the native population, as it was considered wise to limit the experiment at the first, and inexpedient to prescribe for the present any system of registration of marriages and births among natives. Other

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measures were under consideration for the registration of births and deaths among Europeans and Eurasians.

Sanitary improvements in India. Sanitary agencies in Madras.

Paragraph 1.

These papers were forwarded by the Government of India in reply to Sir Stafford Northcote's Despatch, No. 14, of 23d April 1868 (Sanitary), requesting to be furnished with information on various points indicated, so as to show the progress made in Sanitary improvements in India since the subject first attracted the special attention of Government. A circular was addressed calling for reports on the subject from the several Local Governments and Administrations, and also from the Public works and Military departments, the Sanitary Commissioner with the Government of India, and the Inspector General of Hospitals. These several reports were to have been placed in the hands of the Sanitary Commissioner with the Government of India, in order that he might compile from them a complete answer to the despatch of the Secretary of State above quoted; but the reports received from the local governments and administrations being the first of their kind were unfortunately so drawn up as to afford no general view of the sanitary operations which have been undertaken. The Sanitary Commissioner (Dr. Cuningham) was therefore unable to carry out his instructions, but proposes to prepare in his next annual sanitary report, and in all future annual reports, a general summary of sanitary progress for the information of Government.

6 July 1868.

The different replies to the circular of the Government of India were therefore sent to England *in extenso* in Sanitary Despatch, No. 6, 22d February 1870, which was acknowledged by the Secretary of State in Despatch, No. 12, of 5th of May last, noticing with satisfaction "the activity which has been introduced throughout "India with respect to measures of sanitary improvement," but reserving further comment until the receipt of Dr. Cuningham's promised general summary.

These papers were also submitted to the Army Sanitary Commission, who in their memorandum given at page 279 in the Appendix review at the same time the three sanitary Reports quoted in the margin, as belonging essentially to the same subject.

First annual report of the Sanitary Commissioner for Bengal, 1868.
Report on the Sanitary Administration of the Punjab, 1868.
First annual report of the Sanitary Commissioner of the North-western Provinces, India, for 1868.

Dr. David Smith's report for Bengal gives an interesting summary of replies to questions issued by him to 40 medical officers doing civil duty at an equal number of districts and stations in Lower Bengal. A set of simple rules for the conservancy of villages are given in the Appendix to Dr. Smith's report.

Dr. De Renzy, the Sanitary Commissioner for the Punjab, gives an able exposure of the present sanitary condition of towns and stations in his district, including hill stations, together with the general principles to be kept in view in improving them.

He reviews 20 of these groups of populations. The general and fundamental sanitary defects of all the towns examined appear to be—

1st. The unsatisfactory character of the water supply.
2d. The absence of an effective system of disposal of sewage.

Dr. De Renzy gives a list of towns in which he thinks sanitary works should be commenced. Towns he considers "at once the foci and radiating centres of "disease; in them sanitary improvements will be widely beneficial, their effects "easily tested and intelligently appreciated;" while "the example of improved "towns will tell upon others in their vicinity, and create a general conviction of the "necessity for sanitary works."

The Sanitary Commissioner for the North-west Provinces, Mr. Planck, gives a sketch of the sanitary condition of 58 towns inspected by him during the year 1868. At some places, especially at Cawnpore, much has been done to improve public health. At Cawnpore is a district termed by Mr. Planck a region of excavations on the west of the town. This region, with the level places between and around the excavations, has been taken up by the Municipal authorities as their farm, where the nightsoil collected from public and private latrines is carried away and buried in broad shallow trenches provided daily for the purpose. This most important part of conservancy is here carried out, Mr. Planck says, with a persistency and perfection which leaves nothing to be desired.

"The resulting gain has been fourfold:

"1st. The city has been purified to an extent no other city I have seen can boast of.

"2d. The land manured in this way produces crops of sugar-cane and other products, by the sale of which a considerable sum of money is realized.

"3d. The excavations are being gradually filled up by means of the surplus earth which cannot be returned to the trenches. In this way eventually an estate will be created, the value of which, situated as the recovered land will be in the direction in which the city can most easily expand, may become very great, and is sure to become considerable.

"4th. The excavations themselves have been reclaimed from their old condition of pollution as the habitual retiring place of many people."

Sanitary condition of Peshawur.

In March 1869, a report on the sanitary condition of Peshawur was submitted by the Sanitary Commissioner of the Punjab, bringing to notice the grievous sanitary defects under which that city labours.

The comparatively recent practice of transferring men in impaired health to the Murree Sanitarium, causes a high death rate at that place, and a considerable proportion of the mortality at Murree is really due to sickness contracted at Peshawur, and is properly debitable to morbific causes operating at that station. The average death rate for the nine years given in Dr. Bryden's tables of European troops, is 55 per mille, the extremes being 81 and 32 per mille. The most marked characteristic of the Peshawur returns is the destructiveness with which cholera assails the troops when once its virus has gained access to the station. It appears from Dr. Bryden's returns, that out of 522 deaths among European soldiers, no less than 259 were due to cholera, 37 to bowel complaints, and 39 to a continued fever which bears the strongest resemblance to, if it be not identical with, the enteric fever of Europe.

Out of 225 deaths among the native troops, no less than 151 were due to cholera, bowel complaints, and fevers. The death and admission rates of native troops are in excess of the corresponding rates in the whole province for the four years included in Dr. Bryden's tables.

The gaol return presents a melancholy record of mortality. In the ten years from 1858 to 1867 the average death rate has been 10·54 per cent., and it ranged from 17·19 per cent. in 1865 to 2·21 in 1866. In only three years out of the ten did the death rate fall below 10 per cent., namely in 1863–64–66. Of the 376 deaths, 165 were from diarrhœa or dysentery, 33 by cholera, and 126 by fevers. Cholera appears to have prevailed only one year (1862) in an aggravated form, when it slew 23 men. It was, however, satisfactory to note that the prisoners had never been so healthy as during 1868. Up to October there had been only three deaths among an average of 423 prisoners, only one death from dysentery.

The death rate of the city population, which numbers 58,555 souls, as shown by the death registers kept at the Kotwallee, is:

1865	-	266 per 10,000
1866	-	271 ,,
1867	-	470 ,,
,, cholera death rate	-	247 ,,

The cholera death rate in East London which caused such a sensation all over England, was only 73 per 10,000, and it is considered that the Kotwallee register greatly underrates the true mortality.

The people obtain their water supply from two sources, wells, and a small canal led from the Bara River. The wells are very numerous, but the ground about most of them is in an exceedingly filthy state.

There was usually a large hole or cess-pit full of black offensive stuff within three or four feet of the wells. The canal is about eight or nine miles long; the water flows through the cantonment in a number of open surface channels simply scooped out of the soil, and is exposed to every species of contamination—latrines, urinals, wash-houses, stables, slaughter-houses, &c. There are no less than seven burial grounds on the banks of the little stream; several fresh graves were noticed within three feet of the water's edge. There are, moreover, three villages on the banks of

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the cut, with an aggregate population of 1,598 souls, and 37 mills are worked by the water of the stream before it enters the cantonment.

The sanitary condition of the city is thus briefly described :—The water supply is unfit for human or animal use from contamination by remains of the dead, by human excrement, and other polluting matters. There is strictly speaking no sewerage whatever. A portion of the solid excreta of 58,000 inhabitants and many hundreds of domestic animals is removed by hand; but a large portion of it and all the liquid excreta accumulate in the soil, or evaporate on the surface. The streets with few exceptions are unpaved, narrow, and tortuous, in some places roofed over so as greatly to obstruct ventilation. The public latrines are described as in a filthy abominable state. "The establishment of the military cantonment with its 20,000 "inhabitants on the little stream which chiefly supplies their water, must have "greatly added to the miseries of this excrement-poisoned people." Only the heat and dryness of the climate have in fact preserved the people from extinction, by permitting them to sleep in the open air at the tops of their houses during the greater part of the year.

It was earnestly recommended that an engineer conversant with waterworks should be at once appointed to the sole duty of preparing and carrying out a project for supplying the whole community at Peshawur, European and Native, with water from the Bara or Cabul river; that the subject of sewerage should be considered in connexion with that of water supply; and it was considered that the English tubular system, by laying glazed earthenware pipes, might be carried out, at no very great expense, and the sewage to be utilized, as its dilution with water, which is the great objection to the wet system in England, would be one of the greatest recommendations in the dry soil and climate of Peshawur.

The Lieut.-Governor of the Punjab gave directions that the district officer should afford every assistance to the executive Engineer and Sanitary Commissioner in drawing up the scheme for improved water supply, and removing, as far as possible, the evils described.

A quarterly report of the progress made was to be submitted to the Lieut.-Governor.

Dispensaries in North-west Provinces.

The annual report of the dispensaries in the North-west Provinces for the year 1868 bears date 27th May 1869, but was not received in England till March 1870. It is submitted by Mr. Stewart Clark, Inspector General of Dispensaries, North-west Provinces. Three new dispensaries were sanctioned in 1868, which gave a total of 116 Government dispensaries in operation.

There were 541,667 out-patients and 16,619 house patients—total, 558,286, including 50,853 surgical operations treated during the year at an aggregate expenditure of Rs. 201,611 6 7, equal to an average cost per patient of 5 annas 9 pie. The dispensaries are generally reported to be in a satisfactory and efficient condition, with the exception of Meerut, where it was considered that there was a decided falling off in arrangements for the comfort of the sick and the conservancy of the wards, from what had been under the management of the former sub-assistant surgeon.

The Almorah Leper Asylum is favourably mentioned. There were 107 inmates, well housed, living in tolerable comfort, and wonderfully happy under the circumstances, and the arrangements reflected the greatest credit on the committee of management. Little was attempted in a remedial way beyond the enforcement of a certain amount of cleanliness; but even this, with a nourishing diet and comfortable clothing, has produced satisfactory results. This asylum is connected with the Kumaon Mission. Many of the lepers have been taught to read, and the great majority of them had received Christian baptism. A chapel had been erected, in which morning prayers were held daily, and two regular services performed on Sunday.

Hospitals and dispensaries in British Burmah, 1868.

During 1868 there were 14 dispensaries in operation in British Burmah, and one, a branch dispensary at Akyab, had just been completed, but its opening was deferred from its having been seriously damaged by a cyclone. The total number of patients of all classes treated amounted to 35,791, or 4,951 in excess of those treated in 1867. The increase was almost entirely among the out-patients.

In-Patients.			Out-Patients.		
Diseases.	No. Treated.	Ratio per cent.	Diseases.	No. Treated.	Ratio per cent.
Fevers - - -	810	21·72	Fevers - - - -	5,840	18·21
Wounds and Injuries -	540	14·50	Abscess and Ulcers - -	4,420	13·73
Dysentery and Diarrhœa -	417	11·18	Obstipation, Dyspepsia, and Colic	3,831	11·95
Abscess and Ulcers -	324	8·69	Dysentery and Diarrhœa -	2,138	6·67
Venereal affections -	279	7·48	Venereal affections - -	1,751	5·46
Rheumatism - -	182	4·82	Rheumatism - - -	1,419	4·43
Asthenia - - -	89	2·39	Wounds and Injuries - -	1,065	3·32
Bronchitis - -	60	1·61	Ophthalmia - - -	864	2·69
All other diseases - -	1,030	27·61	Bronchitis - - -	844	2·63
			Scabies - - - -	504	1·57
			Splenitis - - -	359	1·12
			Diseases of the Lungs - -	356	1·11
			All other diseases - -	8,695	27·11
Total -	3,731	100·00	Total -	32,064	100·00

The per-centage of deaths to indoor patients admitted was 8·57.

While there was an increase of attendance, it was gratifying to find that the expenditure was gradually decreasing, showing that both care and economy had been applied in the administration of the funds. There had, however, been a falling off in subscriptions. The Chief Commissioner considered that more strenuous efforts should be made to associate the people with these institutions, by inducing the wealthier among the Native residents to become members of the committees, and by encouraging them to use their own personal influence with the people.

Dispensaries in the Punjab.

The Annual Report of the Inspector General of Dispensaries in the Punjab for 1868 was received in the India Office in May 1870.

Ten branch dispensaries under the grant-in-aid rules had been opened during the year under review, giving a total number of 92 in the province—11 1st class, 27 2nd class, and 35 3rd class dispensaries :—74 receive grants in aid from Imperial revenue—18 are supported entirely by funds raised locally.

The following is a statement of the numbers who have received treatment during the years 1867 and 1868 :—

——		1867.	1868.
Number remaining under treatment - -		3,287	3,522
New applicants	In-door - - - -	20,691	19,291
	Out-door - - -	411,533	448,698
	Total - -	435,511	471,511

The year 1868 was an unusually healthy one all over the province, without any wide-spread epidemic of any description. On the other hand, the preceding year (1867) was marked by the prevalence in many districts of epidemic cholera, fevers, and dysentery. The increase of numbers is therefore a clear proof of the increasing confidence of the people in the treatment which they receive at these institutions.

It is urged that the frontier branch dispensaries should be put under the charge of the more highly qualified class of sub-assistant surgeons, as medical treatment is one of the very few civilizing influences which we can bring to bear on the wild and semi-barbarous clans beyond our border.

The receipts for the years 1867 and 1868 were as follows :—

	1867.	1868.
From Imperial revenue - -	64,425 13 4	57,585 9 9
„ Municipal funds - -	62,720 6 3	84,264 1 10
Private subscriptions - -	21,024 8 3	32,365 8 7
	1,48,170 11 10	1,74,215 4 2

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The cost under every head of expenditure is in excess of what it was in the year 1867. The following is a comparative statement for the years 1867 and 1868:—

	1867.	1868.
Cost of Establishment - - -	83,071 2 0	85,585 12 8
„ Native medicines - -	8,204 14 8	8,610 14 10
„ Dieting in-door patients -	11,641 14 5	14,932 8 3
„ Contingent expenditure -	9,436 6 10	11,938 6 10
„ New buildings - - -	22,329 6 3	29,992 8 7
„ Repairing old buildings -	4,949 14 2	8,409 2 11
Total - -	1,39,633 10 4	1,59,514 6 1

Lalla Ishree Doss, an inhabitant of Delhi, displayed the most enlightened and open-handed liberality in voluntarily coming forward and supplying food, clothing, and medicines to the whole of the in-door patients in the Delhi dispensary for one year, from July 1868. Also a wealthy Native gentleman in the Jullundur district, Sada Nund, has offered to build a branch dispensary at Nakodur, entirely at his own expense.

It is regretted that the Lieutenant-Governor's wishes and orders in regard to meetings of dispensary committees have not been fully complied with. There are no less than 49 out of the 92 dispensaries in connexion with which either no committee has been formed or no meeting has been held.

Extension of the Hakeem system.

What is known as the Hakeem system has been in operation in several districts of the Punjab. Introduced into the Sealkote district by Major Mercer, it has been extended to Kurnal, Hooshyarpore, Jhelum, Goojrat, Goojranwala, Shahpore; and in several other districts the system exists in a more or less modified form.

The objects aimed at by the originators of the scheme were, apparently:—

(1.) To supply gratuitously to the people by means of the Hakeems or native practitioners, medical aid and the more simple European medicines.

(2.) To send to the Lahore Medical College a number of Hakeems' sons, there to undergo a complete training in the European system of medicine.

(3.) To supplant the erroneous Hindi and Yunani systems, which alone are known to native practitioners, by the more rational and scientific systems of surgery and medicine now practised by western nations.

A class for teaching native women our system of midwifery has been in existence at Umritsur since 1866, and is considered a success.

As there can be no doubt that the training of a number of native women as midwives would be an immense boon to the native community, and that many lives of infants as well as mothers would be saved by their assistance, it is very gratifying to find that a three years' trial at Umritsur has proved the practicability of the scheme. It is believed that wherever there is a large native town in the neighbourhood of the civil station, the civil surgeon might, if funds are supplied, follow Dr. Taylor's example, and establish both a midwifery class as well as lying-in hospital.

The names of many of the sub-assistant surgeons who have been educated at the Lahore Medical School are spoken of in terms of commendation.

The Punjab Government considered the general results of the year's operations to be very satisfactory and creditable to the administration of the Inspector General, Dr. Dallas.

Gaols, quarantine.

Under the new system ordered by the Government of India, the history of diseases in gaols for the year will be dealt with by the Inspector General of gaols in each local department.

The question of quarantine in gaols continues to occupy attention; it mainly resolved itself into a matter of expense. It was considered desirable to have adequate quarantine wards in every gaol, but the outlay would be great. It would certainly be worth while to incur expense to ensure security when the number of persons newly sentenced is small in proportion to those who might be affected by diseases brought to the gaols by prisoners from without. In central gaols the average number of admissions within the given period of 15 days is small in proportion to the total number of prisoners, and therefore provision should be made for the temporary segregation of new arrivals; but instead of their being placed in barracks calculated to hold six or eight persons, it would be far better to put each individual into a separate cell, so far as such a disposition may be practicable without serious expense. It appears that this system might be carried out at the Lucknow central gaol, where,

it is stated, there are only 23 admissions, on an average of every 15 days, to an average strength of 1,464 prisoners. The time passed in gaol pending the trial should, if in separate confinement, be reckoned as a part of the 15 days isolation recommended by Dr. Cuningham. In smaller district gaols the necessity for the provision of quarantine accommodation is not so urgent, but segregation might be carried out so far as is possible under existing arrangements.

A report was called for (11th August 1869) on the Rawul Pindee gaol, where 88 deaths from fever had occurred among the prisoners during the current year; 10 took place from the same cause in 1868.

Vaccination in British Burmah.

A scheme was submitted in March 1869 by the Chief Commissioner of British Burmah for the establishment of a vaccine department in that province, at an increased cost of Rs. 10,212 per annum. Vaccination had heretofore been carried on by 19 vaccinators at a salary aggregating Rs. 7,800 paid from Imperial revenues. They were under the control of the civil surgeons, and were stationed at the head-quarter towns of districts.

People, therefore, living beyond the limits of the towns, representing the more ignorant and prejudiced portion of the population, could only have their families vaccinated, either (1) by coming long distances into town, or (2) by the vaccinators being sent out into the districts. It was recommended to establish a vaccine department under a superintendent payable from the Imperial revenues to work in the districts, and carry to the doors of the people that blessing they will not go any distance to secure. The establishment to consist of a superintendent and 18 vaccinators, divided into three grades, and with travelling allowance. All the vaccinators to be Burmese, who succeed much better among their own nation than natives of India do.

The scheme was referred to the Sanitary Commissioner with the Government of India, who proposed that the office of Superintendent of Vaccination in British Burmah should be combined with that of Inspector General of Prisons; and also suggested the addition of two native superintendents at Rs. 50 per mensem, besides the 18 vaccinators.

The scheme thus modified was approved by resolution of the Government of India, dated 6th July 1869, No. 1,825; and a careful report of the working of the scheme, after a year's trial, is to be submitted for the information of the Governor General in Council.

Delhi sores.

A report on Delhi sores by Staff Surgeon Major Alexander Smith was forwarded by the Inspector General of Hospitals, 5th July 1869.

While recently (16th January to 26th March 1869) in medical charge of British troops at Delhi, Dr. Smith became aware of the fact that no fewer than 57 decided and 9 suspicious cases of Delhi boils had been detected among the men of the detached wing of the 79th Highlanders, between December 1867 and the end of February 1869. Dr. Smith dissented from the general opinion that the boils are only the local manifestation of a general disease caused by using a bad well water, and by the respiration of impure air, because the substitution of Jumna water for that drawn from wells had not banished the disease, and because there is no evidence that the atmosphere to which the soldiers are exposed at Delhi is now to any appreciable degree less pure than that which exists at other Indian military stations. He considers that though these boils may have occurred with greater frequency and intensity at Delhi than elsewhere, there is distinct evidence that they are not confined to that locality, but prevail to a certain extent at other stations, especially at Lahore and stations in Scinde, where the affection is known by the names of Lahore and Scinde boils. The disease is also met with at Agra, Meerut, Roorkee, Umballa, and Mooltan. Dr. Smith bears testimony to the boils met with at the above-mentioned places possessing features which are in every respect identical in appearance with those found at Delhi.

The disease, as it occurs at Delhi, does not generally show itself till after a residence at the station of several months, though a few cases occurred the second or third month after arrival. It occurs in several forms. One commences as a small slightly elevated nearly painless papule, after some weeks developing into a small indolent abscess. After discharge the sore continues to enlarge by ulceration, does not readily take a healing action, and when it does fills up with extreme slowness. Coincident with the latter changes in the original boil the area of diseased skin is extended by a zone of redness made up of a fresh set of papules, generally arranged circumferentially to the original one. The healing process commences in the centre, gradually following the spread of diseased action outwards,

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until eventually, after perhaps many months of tedious progress, the ulcerated surface heals entirely, leaving a shallow but deeply coloured cicatrix. There is a *second* form known as the dry variety, even more indolent in character and slow in progress, and a *third* form commencing with a circular patch of a red colour studded with small slowly suppurating points. The tendency of this form is to end without much actual ulceration. The boils are most frequently found at the tips of the elbows, a locality of course liable to injury from blows. They also attack the wrists, hands, neck, face, knees, legs, and feet, but are rarely seen on the trunk of the body. Dr. Smith draws conclusions from these points that the boils are caused by the water used in ordinary ablution; that where there is any abrasion of the skin apt to be frequently wetted is almost certain to be the seat of one of the boils in question, the breeding place apparently of some animalcule, which by the medium of the water by itself or its ovas enters the skin either through its natural pores or by a wound or abrasion of its surface. Dr. Smith found treatment with carbolic acid very successful, especially in the early stages of the boil, and recommends the discontinuance of the use of well water for purposes of ablution, and the substitution of river water to be used on all occasions. The proposal to construct waterworks to supply both the town and fort with water from the Jumna would if carried out meet the case.

Administrative report of the Calcutta municipality for 1869.

The Calcutta Municipal report for the year 1869 has been submitted by Mr. Stuart Hogg, chairman of the justices, and an abstract of it will be given in the Sanitary Blue Book for 1871, in conjunction with the annual report of the Sanitary Commissioner with the Government of India for 1869.

Some slight improvement had taken place in the working of the registration of births, giving a total of 5,964 against 5,642 in 1868. But this is considered far from actual facts, but may be accepted as a sign that the prejudices against registration of births are gradually declining. It is somewhat curious that the number of births found out not to have been registered (137) refer entirely to the Christian population, who, it might be presumed, would show less inclination to avoid complying with the municipal laws than members of other persuasions. The number of deaths in 1869 amounted to 12,795 against 13,733 in the previous year, being a decrease of 938.

3,840	died of	fever.
1,836	„	dysentery.
175	„	diarrhœa.
3,592	„	cholera.
3,352	„	various causes.

Assuming the population of Calcutta to be 430,000, the death rate for 1869 had been 29·7 per 1,000 against 31·9 in 1868.

Lock Hospitals came into operation in April 1869. The justices, after some correspondence with Government, agreed to defray one half of the current expenses of the hospitals maintained for Calcutta patients, and the portion of expense for establishment, dieting and clothing of patients, as well as medical superintendence for nine months, which the justices had to pay, amounted to Rs. 13,617 9 10.

Drainage.

Drainage.—Details are given of all the works completed in connexion with the new system of sewers, from their first beginning up to the end of 1869. It appears that, exclusive of the outfall works, they comprise 85,114 feet of brick sewer and 53,570 of pipe sewer, making a total length of 138,714 feet, equal to 26¼ miles of sewers, all of which are available for drainage of the localities in which constructed. The outfall works themselves include the high level sewer, 8,900 feet; the outfall sewer, 3,467 feet; and the excavation of the centre channel of the salt water lake, 8,700 feet, being a total of 21,067 lineal feet.

The contractors' work during 1869 had been checked by a scarcity of bricks, which prevented their commencing on the works before March.

Pipe sewers had been laid in some of the narrowest and most tortuous lanes of Calcutta, without the slightest damage to any house or property; it was therefore hoped that the question of laying successfully pipe sewers in almost any locality had been practically solved.

During the year under report 113 private premises had been drained by the Engineer Department.

Water-works.

Waterworks.—At the close of 1869 the waterworks were so far advanced to completion as to admit of a regular daily supply of water to the town, and this supply had been maintained up to the date of report, 21st February 1870.

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A report on the sanitary condition of the station of Ootacamund during the year 1868–69, was acknowledged in Despatch to the Government of Madras, No. 16, 9th December 1869. The Secretary of State observed with satisfaction the carefu attention which is paid to the conservancy of this station, which may be regarded as the most important of the sanitary stations in India.

Report on Ootacamund.

The orders issued by the Government of Fort St. George in accordance with the instructions issued by the Army Sanitary Commission for conducting a special inquiry into cholera in India were forwarded to the War Office. The Commission, in their reply dated 24th January 1870, concur in the proposals of the Madras Government, and consider them well adapted for obtaining the desired information.

Special inquiry into cholera in India.

Despatch from Madras, 10th August 1869.

The returns of sickness and mortality in the Native Army at Madras were submitted to the Army Sanitary Commission, and a copy of their reply was forwarded to the Government of Fort St. George on the 5th of May, Sanitary Despatch, No. 4, 1870. The commission considered that the returns show a satisfactory degree of health among the Native troops, but that they also indicate clearly the necessity for rigid sanitary care. The points they consider especially important are the need of greater energy in surface cleansing of stations and bazars, better regulation of latrines, and increased attention to the water supply. They consider that the attack of cholera in the lines of the 1st Native Troop regiment at Kamptee in May, June, and July 1868 was, in all probability, due to the assigned cause, namely, the influx of the men's relatives to the lines after the receipt of the Kirwee prize money and the overcrowding and lower sanitary condition consequent thereon.

Despatch to Madras, No. 3, 24th March 1870.

Health of Native army, 1868, Madras.

Monthly proceedings of the Sanitary Commissioner for Madras for 1869.

The following are a few of the subjects which were submitted to the Sanitary Commissioner for consideration and report during the year 1869.

The different annual Festivals seem generally to have passed off successfully, and the sanitary arrangements for the protection of the assembled people to have been efficiently carried out.

Festivals.

Correspondence on this subject with copy of a report by Dr. Macnamara on the potable waters of Bengal with the orders of the Government of India thereon were forwarded for careful consideration, and, in compliance with the request contained in the Despatch of the Secretary of State in the Sanitary Department, No. 12, 24th June 1869, the Sanitary Commissioner in November the same year, submitted a scheme for the analysis of the potable waters at Madras.

Analysis of potable waters.

The chemical examination of waters used by the Troops and Civil population has for some time past engaged the attention of Government, and numerous analyses have been made by the Chemical Examiner at the Presidency. The results have not yet, however, been systematically arranged, or any report prepared upon them. It was recommended, and Government concurred in the recommendation, that the Chemical Examiner at Madras should in the first instance be called upon to submit a report upon the work already done, similar to the reports rendered by Dr. Macnamara in Bengal.

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It was considered that the rules already drawn up for the examination of sources of supply, and analysis of waters, appeared to meet the points suggested by Dr. Angus Smith in his memorandum forwarded by the Army Sanitary Commission (page 205, Sanitary Blue Book for 1869), if supplemented by Wanklyn and Chapman's process for the determination of organic matter containing nitrogen, and by rules for the analysis of soils as required in the memorandum of the Army Sanitary Commission. It was proposed to follow the plan adopted in Bengal of nominating *selected* medical officers of advanced analytical skill as itinerant analysts, so that the selected specimens should be examined with all the minuteness which chemistry can give. Three to be appointed for the Indian Peninsula, and one for Burmah, with special allowance in addition to deputation and travelling allowances.

This report was referred to the government of India (December 1869) to ascertain if it was intended to give immediate effect to the instructions of the Secretary of State.

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Water supply.

A project for the water supply of the southern portion of the Trimulgherry cantonment was submitted to the Sanitary Commissioner, and reported upon by him recommending certain modifications. The Government of India, on the urgent representation of the Resident at Hyderabad as to the necessity for an improved water supply, sanctioned the commencement of the work, leaving any modifications which may be approved on the recommendation of the Government of Madras, to be carried out during the prosecution of the works.

Sanitary improvements in village of Pudiamputtur.

An interesting letter is quoted from the Rev. J. F. Kearns, Missionary of the S.P.G. in foreign parts, dated Pudiamputtur, 7th January 1869 :—

"When I took up my residence here in 1856 as a Missionary there were few villages in this Talook which suffered more from cholera and fever than Pudiamputtur. The village presented an appearance of desolation and wretchedness such as I had never seen in the south of Tinnevelly, where I had previously been. There was scarce a tree to be seen, and in the large Mission compound, on the western side of the village, there was but a solitary tree standing. The village contains several wells, all with excellent water; but at the time of my arrival the two principal wells were surrounded each by an extensive pool of stagnant water formed by the waste from drawing, and continually percolating through the earth into the well. From these pools there extended right through the principal street a long filthy channel containing any excess that escaped from the pools, and the effluvia arising from them was so great that riding by them at early morn I have been obliged to put my handkerchief to my mouth. The yards of the natives' houses were all in a most disgusting state, and I was not astonished that the number of people who that year succumbed to the attacks of cholera was fearfully large. I placed myself in communication with the Collector, and explained my views and wishes to him, and he most cordially agreed with me and sent orders to the Tahsildar to assist me as far as possible in my endeavours to improve the place. Accordingly with this aid I had every well walled up, the two filthy channels cleaned, one deepened and extended so as to carry the water beyond the village, and the other diverted into a field, the owner of which at first stoutly resisted us, but he has since discovered, as I told him at the time he would, that the channel has been a source of wealth to him. The pools we filled up altogether, raising the earth round the wells sufficiently high to throw the water off; and we had removed from the yards every particle of manure which they contained, and the practice since has been to remove all manure from the yards a clear month before the monsoon sets in. I next commenced to plant trees, and a village which was once remarkable for the absence of trees is now as remarkable for the rich luxuriant trees which surround it, and the benefits of which the people acknowledge and appreciate. There are at present standing in the streets, on the road surrounding the village, and in the Mission compound, altogether 700 trees, all of them valuable, the greater number being margosa, and all planted by myself. I make it a practice to have the streets thoroughly cleaned at stated periods, but I never permit filth to remain for an instant in the public streets. In addition to all this I have endeavoured to impress upon the minds of the people the great value of sanitary precautions, and I am happy to say that I have been successful to some extent. Perhaps to these improvements, under a merciful Providence, the immunity referred to in the proceedings of Government is due ; and here I would record the ready help which I have always received from the Collector for the time being to keep the village in a clean and healthy state. I would also mention the hearty co-operation of our intelligent Village Moonsiff."

"The value of trees in a village, and how their presence ministers to the health of the inhabitants, are well known; but in North Tinnevelly, where they are far more needed than in the south, owing to the extensive tracts of black cotton soil from which the heat radiates with great intensity, very few streets enjoy the grateful shade which may be experienced in almost every village in the south; and this is entirely due to the fact that the Zemindars claim *every tree* upon their estates, no matter by whom planted, and no matter where; and this deters the people from planting their streets as otherwise in the great majority of cases they would do, and so add to their comfort if not to their health."

In the proceedings of the Madras Government (Public Department) 3d November, 1868, this village is returned as "exempt from cholera, cause unknown," which led to the above letter being addressed to the Chief Secretary to Government.

Special inquiry into cholera.

With reference to the instructions forwarded from the Army Sanitary Commission recommending the selection of some locality in which Cholera is endemic with a view to special inquiry upon all points noted by the Commission, the Sanitary Com-

missioner stated that Kurnool, Trichinopoly, and Salem seemed to present all the necessary conditions for the inquiry. All are very obnoxious to cholera, and Kurnool to fever of a severe type, while they occupy moderate areas. A committee was appointed to conduct the inquiry.

A detailed plan was submitted by the Inspector General of the Indian Medical Department for the establishment of a Cholera Hospital, having for its main object the experimental trial of old and new methods of treatment under circumstances favourable to the scientific investigation and record of all the phenomena of the disease. The Government approved, and ordered the selection of a suitable site, with the preparation of plans and estimates for the Cholera Hospital and its subsidiary buildings.

Vital statistics of the city of Madras, 1869.

The Sanitary Commissioner commenced in the first quarter of 1869 a new quarterly series of reports on the state of public health in the city of Madras as regards actual mortality and the number of births registered, certain clauses of the Madras Municipal Act No. IX. of 1867, directing the Commissioners to keep registers of births and deaths and to appoint district registrars, having been fully brought into force, and the regulations made binding on the inhabitants.

First quarter.

The number of deaths in the first quarter of 1869 was 2,466. Cholera was entirely absent, an occurrence without precedent in the recent history of Madras in any previous first quarter of the year. A comparison of the deaths in the first quarters of 1868 and 1869 shows the following results:—

TABLE showing the number of DEATHS from SPECIAL DISEASES in the first quarter of 1869 compared with that of 1868.

Diseases.	1868.	1869.	Increase.	Decrease.
Small-pox - - -	372	16	—	356
Measles - - - -	50	3	—	47
Fevers - - - -	524	476	—	48
Dysentery - - -	306	191	—	115
Diarrhœa - - -	223	108	—	115
Cholera - - - -	11	—	—	11
Total of special diseases -	1,486	794	—	692
Other diseases - -	1,656	1,672	16	—
General total - -	3,142	2,466	—	676

An analysis is given of the births during the quarter, but the return is held to be very incomplete. In fact, if correct, it would seem to indicate the speedy extinction of the whole population, for the births in the quarter under review amounted, according to the return, to 1,091 in all, against an undoubted mortality of 2,466.

Vital statistics. Second quarter of 1869.

The number of deaths registered were 2,432, bearing a favourable contrast with the average of the preceding nine years (2830·4), being 398·4 less. The proportion of deaths of the two sexes is as 175 males to 100 females.

The results of the quarter, as compared with that of the immediately preceding year, are as follows:—

Diseases.	1868.	1869.	Increase.	Decrease.
Small-pox - - -	361	6	—	345
Measles - - - -	28	1	—	27
Fevers - - - -	529	483	—	46
Dysentery - - -	199	169	—	30
Diarrhœa - - -	176	146	—	30
Cholera - - - -	—	15	15	—
Total of special diseases -	1,293	827	—	466
Other diseases - - -	1,719	1,602	—	117
General total - -	3,012	2,432	—	580

The *reported* births were only 993.

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Third quarter of 1869.

Vital statistics.

The number of deaths registered amounted to 3,317, or 177 less than the mean of the nine preceding third quarters. The proportion of deaths among males and females is as 100 males to 92·5 females.

The following table contrasts the third quarters of 1868 and 1869:—

Diseases.	1868.	1869.	Increase.	Decrease.
Small-pox	54	4	—	50
Measles	6	—	—	6
Fever	731	524	—	207
Dysentery	331	259	—	72
Diarrhœa	285	229	—	56
Cholera	—	453	453	—
Total of special diseases	1,407	1,465	58	—
Other diseases	2,008	1,848	—	160
General total	3,415	3,317	—	98

The births registered were 1,361 out of a population of 450,000 souls, representing a per mille birth rate of 3·02 per quarter. No advance had evidently been made as regards registration of births.

Fourth quarter of 1869.

The deaths during this quarter amounted to 3,047, or 72·4 less than the average of the nine preceding fourth quarters. The proportion of deaths in each sex is 214 males to 200 females, or as 100 is to 93·4.

TABLE showing the NUMBER of DEATHS from "special diseases" and "other diseases" in the fourth quarter of 1869, compared with that of 1868.

Diseases.	1868.	1869.	Increase.	Decrease.
Small-pox	12	2	—	10
Measles	1	—	—	1
Fever	448	532	84	—
Dysentery	183	269	86	—
Diarrhœa	128	185	57	—
Cholera	2	100	98	—
Total of special diseases	774	1,088	314	—
Other diseases	1,859	1,959	100	—
General total	2,633	3,047	414	—

The following table gives the increase and decrease in each quarter:—

Diseases.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	Increase in Fourth Quarter compared with			Increase in Fourth Quarter compared with		
					First Quarter.	Second Quarter.	Third Quarter.	First Quarter.	Second Quarter.	Third Quarter.
Small-pox	16	16	4	2	—	—	—	14	14	2
Measles	3	1	—	—	—	—	—	3	1	—
Fevers	476	483	524	532	56	49	8	—	—	—
Dysentery	191	169	259	269	78	100	10	—	—	—
Diarrhœa	108	146	229	185	77	39	—	—	—	44
Cholera	—	15	453	100	100	85	—	—	—	353
Total of special diseases	794	830	1,469	1,088	294	258	—	—	—	381
Other diseases	1,672	1,602	1,848	1,959	287	357	111	—	—	—
General total	2,466	2,432	3,317	3,047	581	615	—	—	—	270

The return of births during this quarter was 1,167.

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Census.
G.O. No. 685, 22 May 1869.

The Madras Government recognized the importance of a Census of the Town of Madras as an imperial necessity as well as a municipal one, and on receiving a complete report of the method proposed of taking the census will be prepared to obtain the necessary sanction of the Government of India for a State contribution in aid of the operation. A memorandum was accordingly submitted by the Census Committee, but the Government of India (October 1869) directed that the Census of Madras should be deferred until the general Census of 1871.

Report on working of Contagious Diseases Act.

A report, dated 15th April 1869, on the working for six months of the Indian Contagious Diseases Act, No. XIV., 1868, was submitted by Dr. Stanbrough, Health Officer, Madras. With certain exceptions he considered that the system established had worked satisfactorily.

The town of Madras, for the purposes of the Act, was divided into five districts, coincident with the municipal divisions, and in each of these Health Offices for the registration and examination of common prostitutes have been established. Seven goomastahs are attached to each of the divisions, and to them is assigned the duty of obtaining the necessary information regarding the brothels and residences of prostitutes within their respective divisions. A printed notice is issued under signature of the Health Officer to each brothel keeper and prostitute requiring their attendance at a certain date at the Health Office for registration and examination, information being laid before the magistrate to compel attendance in case of non-compliance with the notice. If found diseased the prostitute is sent to a Lock Hospital, but if free from disease she has a registration ticket given her requiring a weekly appearance for medical examination. If prostitutes are convicted of disobeying the rules they are liable to imprisonment. But as yet there has been little overt resistance to the law, and the treatment of the women at the Lock Hospital had been kind, and removed the apprehension felt at the first introduction of the system. There had already been a sensible progress made in the reduction of venereal disease by the sequestration of the class of prostitutes most resorted by the European population of the town.

The total number of registrations had been 826, and the total number of prostitutes found to be diseased 638, exhibiting a ratio of sick and total number registered of 77·23. The highest ratio of disease was among the Europeans and East Indians, who are frequented almost exclusively by European soldiers and sailors; and Dr. Stanbrough brings to notice the frequent introduction of venereal disease into Madras by the European sailors belonging to coasting vessels, and points out that much of the benefit to public health contemplated by the Act will be frustrated if this seafaring and migratory class cannot be controlled. The question was to be referred to the Advocate-General, whether under the Port Rules now being revised, the crews of ships visiting the Port of Madras, other than ships of the Royal navy, may be subjected to medical inspection before landing.

The health officer suggests greater facility for the treatment of out-patients who would avoid the publicity of a general hospital, and brings to notice the defective sanitary condition of that portion of the town where the prostitutes reside.

Certain classes of women, though actually practising prostitution, escape the action of the law, such as dancing girls, slave girls, &c.; but Government considered that although the instructions issued to the health officer distinguished carefully between concubinage and prostitution, it would be that officer's duty to enforce the law against all the classes enumerated, if there was evidence of their acting as common prostitutes.

Health Officer's Establishment.

Government approved of a re-distribution, at an additional expense of 47 rs. per mensem, of the health officer's establishment, and that an additional health office should be opened at St. Thomé.

Extension of Act I. 1866.

The Sanitary Commissioner (23rd October 1869) forwarded extracts of letters from officers commanding divisions, and recommended the extension of the operation of the rules of Act I. of 1866, relating to the prevention of venereal disease in all Military Cantonments within a radius of four miles from their boundaries.

Report on Madras Sewage Farm.

A report was submitted by Captain Tulloch, R.E., upon the sewage farm, based upon an inspection made during the period he officiated as Sanitary Commissioner, entering fully into the economic bearings of the experiment, and, viewed in this light, there seems little doubt of its proving a great financial success.

Abstract of Report.

The Sewage Farm is situated between Pursewalkum and the Government Powder Mills, and consists of about 37 acres of land, of which nearly 2 are at present under cultivation. The site is an old swamp, where, after every heavy shower of rain, water used to collect and stand in pools for weeks, and sometimes months together.

MADRAS. The ground is very little elevated above the sea; on an average not more than 4 feet.

The soil is as bad as it well can be. It consists of a stiff clay mixed with much salt and a little sand. After being dug out and exposed to the sun, the lumps of clay split and break up, and a shower of rain causes a deposit of sand to appear on the surface. If it were not for the sand it would be difficult to conceive a soil less suited to the purposes of agriculture.

From the site being so low cultivation could not be successfully carried on unless the land was artificially raised. A plan was adopted which had proved successful in the People's Park; tanks were dug in convenient positions, and the earth excavated from them was employed to raise the other portions. A small earthen embankment being run round the entire enclosure to keep out the rain which falls on the adjacent high grounds from running on to the land. The farm may be considered as well drained as could reasonably be expected; no water is liable to flood it from the outside, and the rain which falls on the farm itself runs off into the tanks, which thus answer the further purpose of storing a supply for the crops.

The land came into the possession of the Municipal Commissioners on the 7th June June 1869, and operations were commenced on the 29th June.

At present the only sewage made use of is that which flows from the Perambore barracks, and a small portion of the adjacent village. The total quantity available does not amount at the most to more than 5,000 gallons in the 24 hours, and this is run off at three different times of the day—in the early morning, at noon, and in the evening. At each time the flow does not continue for more than half an hour or so. In that short period the quantity of sewage which has previously collected becomes exhausted. It is evident from this that no very extensive area can be brought under the influence of the fertilizing stream.

The point at which the sewage is taken is so low that it has to be raised by pecottahs in two lifts each of 11 feet. The sewage runs along in a six-inch semicircular earthenware unglazed tube, which is laid on the top of an embankment, with a slope of 1 in 200. The stream is not rapid, but neither on the other hand is it sluggish. The sewage just flows easily along.

The consistency of the liquid varies a good deal at present. Sometimes it is nearly as thick as pea-soup, at others it is much thinner. This is probably due to the occasional showers of rain. There is considerable variation in the viscidity of the sewage, but none whatever in its odour, which is as strong as can well be imagined, but the smell is only overpowering near the channel itself, as soon as the sewage flows over the farm, and over the beds laid out to receive it, it loses its offensiveness very soon.

The plan of cultivation which has been adopted at present is to prepare a bed 2 or 3 yards wide, by from 6 to 8 long, and to let the sewage flow on to it for 2 or 3 consecutive days. Another two days are then allowed to elapse before seed is put down. After the plants have come up, they are watered with sewage every three or four days. If any of the crops show signs of "bleaching," it is assumed that the sewage is too strong for them, and the supply is stopped or diluted with water.

Experience has shown that no two crops can be treated in precisely the same manner, and that it is very necessary to watch the effects of the sewage on each, as a guide to the mode of treatment. Certain crops, such as the grasses, are found to take greedily any quantity of sewage with which they may be inundated, whilst others, such as certain kinds of Indian beans, require very little.

The best crop is of the same class as those which have succeeded so well in Europe. Indeed, if we continue to get as fine crops of guinea grass as the one just cut, the yearly produce of the land will be enormous. This grass was planted from roots on the 11th July. A cutting which was not weighed, 3½ feet high, was taken from it on the 27th August. Another cutting was taken from it on the 21st September; this was weighed and found to be 248 lbs. The bed was only 23 feet long by 18 feet wide. On these data the produce of an acre would be (say) 11 tons per crop, and supposing that 8 crops were taken off the land in the year, the total quantity of guinea grass would be 88 tons; or, if converted into hay, 29 tons. Taking the average price that would probably be obtained for this fodder in the Madras market at only 20 rupees per ton, the yearly returns, without considering working expenses, from an acre of land would be 580 rupees. If the yield from the farm comes to be even one quarter of this, it will be a most successful undertaking.

The second best crop is a bed of bandikai, which, although planted too close, the native gardeners declare to be admirable. They certainly look in very fine condition

The seeds were put down on the 3rd July, and the plants are expected to yield early in October. Sewage seems to agree remarkably well with this vegetable, and it has never shown any signs of failure.

The native bean called kottavarakai thrives well. Seeds were planted on the 26th July, and the first crop of beans was picked on the 17th September. The plants look very healthy, but those seem the best which stand nearest the sewage channel. Oddly enough this end of the bed is made of earth composed of the stiffest clay, while the rest of the bed is part of an old native burial ground.

Another good crop is the raggy, which stands about 3½ feet high. It was unfortunately planted too close, and was not cut when it was young as it ought to have been (according to the regular native custom). The consequence is, that it has run too much to straw. The seeds were put down on the 29th July, and the crop is expected to be cut about the end of October.

Country radishes are doing well, but they require sewage in a very dilute state, otherwise they bleach.

Carolina paddy has come up, but is not in a healthy state. More experiments are required before we shall succeed with this crop.

The native vegetables "peerkenkai" and "pavakai" thrive pretty well, but not so well as the native vegetable marrow, which look in a more healthy state.

Some of the best crops on the farm are the native greens called "arrakeera." The plants grow most luxurantly, and take a large quantity of sewage, but still not so much as the grasses.

Sweet potatoes and ground nuts promised very well, but some pigs from the neighbouring village got into the beds, and rooted up nearly the entire crop.

There are a few plants of Egyptian cotton, and these are in blossom, but the experiment is on too small a scale to draw any conclusions from.

The tomatoes are young at present, but seem to be coming up very well. One or two vegetables do not like the sewage. These are karamanee, onions, chillies, country beans, &c.

The lucerne crop has not turned out nearly so well as was expected, but this is certainly not due to the sewage, for a small part of the bed has come up very well, although the rest is in a most unsatisfactory state. Capt. Tulloch is inclined to think that the soil is not so well suited to this crop as could be wished, but longer experience will, no doubt, suggest a better mode of treating the plant with sewage. This is one of the crops to which great attention should be paid, as its growth is rapid, and it can absorb an enormous quantity of liquid.

The hurriala grass grows well, but has been planted only recently.

There are many vegetables besides those mentioned above which are grown on the farm, but they call for no particular remark.

The trees which have been planted are of the following kinds, and are all doing well:—cocoanut, jack, and tamarind. These have not been treated with sewage.

Capt. Tulloch thinks the present experiment is as successful as the advocates of sewage utilization could possibly hope for. It must not, however, be forgotten that the results are not altogether due to the sewage. The quantity of this fertilising liquid is so small that each crop gets but very little indeed. When the sewage fails water is used, and much of the good effect already produced is no doubt due to this cause. In fact, the farm has been too recently established, and at present is on too small a scale to draw any permanent conclusions from except of a general nature.

"Of certain facts there appears to be no doubt at all; these are that both the guinea grass and the common hurriala grass flourish most luxuriantly under the sewage, and are able to absorb large quantities of it. The guinea grass has been found to grow in one day as much as two inches, and two crops have been taken in little more than nine weeks from the date of first planting. Mr. Lee, the engineer to the Municipality, informs me that whenever there is any excess of sewage, *i.e.*, any sewage over after all the vegetables have been fully watered, it is turned on to the grasses and allowed to run until it is exhausted, and he says that at present he has not been able to find any limit to the quantity which these crops may be irrigated with. I look upon these facts as the most important of all, inasmuch as they go to confirm the general experience of England. It is the grasses we must chiefly cultivate, and especially at first until we know more of the manner in which each kind of vegetable should be treated, if we wish to deprive our town filth rapidly of all power to do harm. In other words, the conversion of sewage into fodder should, in the present state of the science of utilizing sewage, be that process in every farm to which the greatest attention should be paid. If the municipality attend to this, I

MADRAS. have no doubt they will ultimately recoup themselves for all the expenses to which they may be put."

With regard to the best mode of applying the sewage to grasses, none can be more simple than, and none has proved so successful as the general one adopted in England. It is found that all expensive expedients, such, for instance, as cultivation by the ridge-and-furrow system, by underground pipes, by hose and jet, &c., &c., are invariably failures, and that the only plan is to let the sewage run over the fields by itself after having previously levelled the surface, so that there should be no inequalities of ground. Practically there is no limit to the length or breadth of the field. It may be 50 yards wide, or it may be 300. If the sewage is able to run easily along over the entire surface, and to keep the ground well flooded, the effect in either case will be equally good. The sewage will rapidly be deprived of all the foul matters, and the grasses will grow luxuriantly.

The beds on the Madras farm are too small to judge as yet of the wonderfully assimilating power of the grasses. When the larger ones are finished, and the quantity of sewage is increased, it will be interesting to mark the sewage as it comes on to the field and as it leaves it. The manner in which it is filtered as it passes quietly along through the grasses can hardly be realized unless it is seen.

Captain Tulloch considers that a portion of the poudrette and other town filth in a solid form, large quantities of which are being daily removed by the municipality beyond the limits of Madras, should be used as a top dressing for the soil; he thinks no nuisance would result if the land is not left fallow, but a constant succession of crops kept up. "So long as the field is green, so long we may conclude that the "foul matters in the soil are being removed by the plants, and being rendered "innocuous."

The solid filth need not be buried in pits, but laid over the land and ploughed well in. After this the sewage should be run in a concentrated state over the field for two or three days until it is found to be sufficiently manured, when, after another two or three days it may be planted with grass. If there were abundance of sewage it would be preferable to keep the field under water for a week or two or even longer, but the present farm is so small that if this were done now there would not be enough sewage left for other purposes.

Subsequent experience will probably show that after about two years the land will become so rich that grass will not grow on it. In England, after every three years it becomes necessary to replough the ground, and to take a wheat or oats or other exhausting crop off it. Some of the Indian grains would probably answer the same purpose in Madras. Immediately after the grain crop the land may be put down again with grass, which will continue to flourish for another two or three years.

Captain Tulloch thinks that the hot sun in India would undoubtedly cause the grass to grow more rapidly than in England. The Italian rye grass is usually cut in England from four to six times in the 12 months; in Madras 10 or 12 crops might possibly be produced in the same time. If this proves correct the profits from sewage utilization ought to be very large indeed.

During the monsoon the excessive water might cause inconvenience, but the power of water to absorb gases is so great that most of the smell from the sewage would be carried away by the rain into the soil; and in case of floods means could be contrived to let the flood water escape into the neighbouring sewers when the storm abates.

Captain Tulloch does not consider that evil consequences will arise to the inhabitants from the establishment of this farm, but that the results will be beneficial. A source of sickness and disease in the form of stagnant sewage has been removed from the precincts of the native regiment quartered at Perambore.

Good as the effects are at present, they will be more visible in the course of the next few months. Colonel Denison (President of the Municipal Commission) has nearly completed the works for utilizing the sewage of two other districts, viz., Choolay and Erangoonum. The main drains from these localities, which are among the filthiest in the whole of Madras, run close to the farm. All the sewage which they bring down will be carried by a small earthenware tube into a well situated within the grounds, and will be raised by pecottahs in a single lift, and distributed at once over the beds. This will give the municipality the command of a much greater quantity of water than they have at present, and will enable them to continue their experiment on a larger and more satisfactory scale.

The Sanitary Commissioner (Dr. Ranking) endorses the opinion expressed by Captain Tulloch regarding the sanitary aspect of the question, and considers that

the scheme opens up the question of the possibility of draining the city by sections, and of utilizing the sewage of each section upon adjoining waste lands. He had doubts, however, about Captain Tulloch's proposition of utilizing the solid town filth as well as the sewage, but would offer no objection if the solid excreta of the community could be mixed with the liquid matters, and distributed in solution and suspension with them.

Dr. Ranking thinks it desirable to ascertain how far the results now obtained are due to *sewage* or to *simple* irrigation. To this end similar crops might be planted upon similar areas of ground, the one simply irrigated by water, the other by sewage, and the yield of the crops compared.

Dr. Ranking thinks it also desirable that the sewage should be analysed at the storing reservoir, and as it flows upon the land. At present it flows along open channels, and much of its fertilizing properties are lost by the escape of ammonia and sulphide of ammonium into the atmosphere. This might be remedied by conveying the sewage to the fields in closed glazed earthenware pipes, as is proposed to be done in the case of the districts of Choolay and Erangoonum. Analysis would determine the extent to which loss of fertilizing properties (the result of escape of the gaseous products of decomposition) takes place during the flow of the sewage from one reservoir to another, and from the last reservoir to the fields; and this analysis he recommends should be made.

G.O. 18 Nov. 1869.

The Madras Government considered that the Municipal Commissioners had rendered an important public service, and His Excellency offers Colonel Denison, the President of the Commission, his cordial congratulations on the successful result of his labours. The application of excreta and solid filth should be tried on a small scale, and under careful observation, and Government recommended the suggestions of Dr. Ranking to the attention of the Municipal Commissioners.

Provincial dispensaries as popular schools of medicine.

A Committee appointed in July 1869 to consider the best means of utilizing the Provincial Dispensaries as popular schools of medicine submitted their report in the following December. They advised the selection of one of the 19 districts into which the Presidency is divided, recommending Cuddapah, where the suggestions made by the Committee should be carried out at first on a limited scale. They considered that the civil hospital at Cuddapah would yield a field of practice to ensure the satisfactory training of 27 pupils, who might be divided into three batches of nine each, representing the three years over which it is proposed the course of instruction should extend. The professional training to be of a simple and practical kind, and conveyed in the vernaculars; the candidates to be, if possible, intelligent active natives of the locality in which they are ultimately to labour. The students to be examined and reported on at the close of each year, and at the end of the third year a certificate of qualification to be given to all passed candidates

The candidates to be of the age of 20 to 25 years, and to be paid a small stipend, increasing each of the three years, but the whole amount to be refunded in event of abandoning their studies. At first the cost of such education would fall on Government, but it is hoped that Native gentlemen would assist by the endowment of scholarships and otherwise.

The selected candidates to be be termed *village dressers*, and having public duties to perform, both medical and sanitary, are entitled to remuneration, which the committee fix at 10 rupees per mensem for the first five years, increasing afterwards to 12 and 15, when fitness has been proved by professional examination: house rent at 8 annas per mensem, being a permanent allowance to all village dressers.

The position of the village dresser should be such as to give him the personal influence required to facilitate the introduction, among the native community, of his medical and sanitary knowledge; above all his position and work should be recognized by the civil authorities. In addition to his duties as village physician or surgeon, the "dresser" would be virtually the Sanitary Inspector of his circle, the reporter of cases of sudden deaths, the willing helper of the Vaccinator, and the professional adviser and attendant of the community when epidemic disease breaks out. He will not be debarred from private practice.

As his personal influence increases, the more intelligent Natives would assist in plans for the public good, such as the erection of a small village hospital or a standard plan, and in connection with the dispensary.

Dispensaries

The cost of a provincial medical school is estimated at 7,144 rupees per annum.

Indigenous medicines would be principally used, but the committee recommend central medical stores at convenient points, where indigenous drugs could be

collected and forwarded to village dispensaries, and packets of medicine kept to meet the emergencies of epidemics. The medicines to be issued gratis to the poor alone; from others a fixed rate of remuneration should be required. English medicines, such as quinine, should be invariably sold.

The arrangement adopted in the Punjab of placing these village dispensaries, &c., under local boards, united under a general president to form a district board, is recommended by the committee. They also think the experiment might be tried of training a female midwifery class in connection with each provincial medical school, though this question is one, they consider, to be surrounded with much difficulty.

Typhoid fever at Bangalore.

In consequence of an outbreak of typhoid fever at Bangalore, the sanitary commissioner (G. O., 29th October 1869) was directed to visit that station to investigate and report on the subject. Dr. Ranking's report was submitted 4th December 1869.

He considers that typhoid fever is endemic at Bangalore; and that those conditions held to be capable of originating it *de novo*, or of favouring the maturation of the germ, or promoting that specific decomposition in excrement which the introduction of the germ is held by some to impart, exist in abundance in the neighbourhood of the Horse Artillery Barracks; and that the water supply, if not absolutely impure and unwholesome, is under grave suspicion. Dr. Ranking's conclusions, briefly stated, are:—

I. That it is impossible to say whether typhoid fever, in the first instance, was imported into Bangalore or originated *de novo*.

II. That all those conditions exist that are held to favour its incidence whichever theory be accepted.

III. That the fever is endemic in the place, that it shows a tendency to appear each year after the hot weather, and coincidently with the first showers of the south-west monsoon, and that it is due to the decomposition set up in fæcal and other accumulations of filth.

IV. That the tendency the disease has shown to expend itself upon the occupants of the north block of the barracks of the Royal Horse Artillery, is due to its proximity to the Ulsoor village, where the conditions, noted in No. II., exist in great intensity, and which village is in dangerous proximity to the said barrack block.

The remedial measures recommended are,—that the sanitary improvements already commenced in the village of Ulsoor should be carried out as speedily as possible; that the horse-keepers and grass cutters lines and associated villages should be removed; that the completion of the scheme for the provision of a pure water supply be hastened, certain wells in the interim being abandoned and filled, those at present fit for use being covered and furnished with pumps to avoid contamination; and that the cantonment rules should be strictly enforced.

The first account of the existence of typhoid fever at Bangalore is in the Army Medical Report for 1863.

Since 1865, 65 cases of this disease with 19 deaths have been entered in the returns of the European troops of the Madras army. In Bengal in 1868 no less than 35 deaths are recorded, or 5·5 per cent. upon the total deaths of the year. The disease is manifestly, Dr. Ranking thinks, on the increase in India, and is daily acquiring greater importance.

Diphtheria at Bangalore.

The Sanitary Commissioner had previously in May 1869 visited Bangalore to report on an outbreak of diphtheria at that station, from information acquired from the medical officers the total number of tabulated attacks are 14, of these one occurred in 1863, and one in 1865. In 1866 no instance of the disease appears to have been observed; in 1867 one case is recorded; in 1868 three; and in 1869 eight; of the 14 tabulated cases six occurred in adults of the ages of 21, 22, 25, 42, 65, and 70, respectively, and eight amongst children. Of the total number, eight died and six recovered, the mortality, therefore, was 57 per cent. of cases attacked. The attacks were distributed amongst 12 houses. In two instances only did a second case occur in a house in which the disease had previously shown itself.

Seventeen sporadic cases of diphtheria occurred at Bangalore from time to time since 1847. The present epidemic may be said to date from October 1868.

Dr. Ranking's report enters fully into the history of this disease, and the local and personal conditions predisposing to it, and recommended certain sanitary improvements which were adopted by the Cantonment Municipal Board at Bangalore.

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Health of British Troops, 1867, 1868.

The report on the health of British troops in the Bombay Presidency for 1867, by Dr. A. Gordon, Inspector General, was submitted to the Army Sanitary Commission, and their reply, dated 23rd July 1869, was forwarded to Bombay in Despatch, No. 17, 25th August. The commission call especial attention to certain paragraphs in Dr. Gordon's report pointing to existing sanitary defects at certain stations influencing the health of troops there.

1. *Construction of Barracks—Upper Stories.*—" As to the construction of the " buildings it is to be regretted that a larger number of them are not upper-storied, " for it has been abundantly proved that persons who sleep on the upper stories of " dwellings suffer much less from malarial fever than those who sleep on the " ground floor; and as this fever with its sequelæ is by far the most frequent " disease in India, it would appear that one of the most certain means of escaping " it is still of very limited application."

2. *Flooring.*—" The flooring of the barracks is in many instances of a very " objectionable kind. At Colaba, Deolalee, Deesa, and Ghizree, in the old depôt " barracks at Poona, at Sholapore, and in several of the rooms at Kirkee and " Poorundhur, for example, the floor is formed of mud and cow-dung, mud floors " exist likewise in several barracks in the Mhow circle, although the use of cow- " dung for coating them has there been discontinued at the recommendation of " Deputy Inspector General Murphy."

3. *General condition of vicinity of Barracks and Stations.*—" In the native towns " and villages which surround the stations at varying distances, sanitary measures " are almost entirely neglected; and the inhabitants are seldom free from zymotic " diseases, which every now and again spread into localities where every sanitary " precaution is adopted."

4. *Water supply.*—" Except at Poona, Kirkee, Museerabad, Kurrachee, and " Hyderabad, the water in the Bombay Presidency is naturally very good, the only " impurities being such as arise from the mode of carrying it from the wells and " storing it for use."

" It is not easy to suggest any plan which would answer better than the one in force for the conveyance of water in this country, as the *mussack* is lighter and more portable than any wooden bucket, although perhaps not so easily kept clean.

" The system of straining or filtering the water through sand and charcoal in an earthenware chattie, even when conscientiously carried out, is of little or no use, and is quite ineffectual for removing the saline impregnation from the water found at Nusseerabad and in Sind.

" The water at Nusseerabad itself is too saline for drinking purposes; the supply for the troops is therefore brought from Delwarra, a village two miles distant where the water is tolerably good. It is conveyed in large skins on the backs of bullocks, and is thus liable to contract many impurities."

5. *Intemperance.*—" It cannot be doubted that the amount of disease attributable to this cause has been greatly understated, but even thus it would appear to have occasioned admissions of nearly 4 per cent. of the strength. A great deal of the intemperance, however, at the latter part of the year resulted from the distribution of the Banda and Kirwee prize money."

6. *Clothing.*—" In the cavalry and artillery the men still wear, in the rainy and " cold seasons, and at night on guard even in the hot season, the thick heavy cloth " garments such as they wear at home, which are unquestionably too hot and tight- " fitting to be conducive to health and comfort." This subject had been brought to the notice of the Commander-in-Chief. Dr. Gordon considered that serge clothing might be adopted for the cavalry and artillery in India quite as well as for the infantry, for it has already been proved in China and elsewhere, that serge, although certainly not so durable as cloth, is nevertheless well enough suited as a dress in which to perform the artillery exercises.

The Army Sanitary Commission also call attention to the deplorable mortality among soldiers' wives and children at the stations, with a view to inquiry being made into its causes, and for providing the best practicable methods of diminishing the liability of women and children to preventible diseases.

BOMBAY. Dr. Gordon's report on the British troops for 1868 was forwarded to the Army Sanitary Commission in October the following year. In their reply, dated 26th January 1870, the Commission considers that this report shows a general advance in sanitary legislation for cantonments and their vicinity, and is on the whole satisfactory as regards the health of troops. The death-rate amongst British troops for 1868 was under 15 per 1,000, but it is still greater than it may eventually become under improved sanitary conditions, including the occupation of hill stations.

The Commission attract attention to—

1. Deficient accommodation at Bombay for lunatic soldiers *in transitu*.
2. The unhealthy condition of the General Depôt Barracks at Kurrachee, and the outbreak of fever and sunstroke apparently depending on these defects.
3. The defective condition of the hospital at Kurrachee.
4. The great prevalence of intemperance, together with the amount of disease and crime arising from it.
5. Malarial fever at Sholapore, the causes of which require examination and removal.
6. Information and tables regarding the high death-rate of children in India. It appears from the tables, that the underlying cause of loss of infantile life (as indicated by the diseases) is malaria, to the effects of which children are more subject apparently than adults.

The Commission consider that these facts afford additional evidence, were such required, that health and life in India very much depend on malarial action in producing miasmatic diseases; and that to the lessening or destruction of malaria by works and measures already fully discussed in previous papers, we must look for a great part of any permanent improvement in public health.

A copy of this letter was forwarded to Bombay in Sanitary Despatch No. 3, 24th March 1870, and the Secretary of State desired that the remarks therein contained might receive careful attention, and that the points to which they advert should receive prominent notice in the observations accompanying the returns of 1869.

The remarks of the Army Sanitary Commission on Dr. Gordon's Report for 1867 were considered by the Sanitary Commissioner for Bombay, who points out (Proceedings for October 1869) that no point in these remarks had escaped the attention of the Sanitary Department at Bombay, but had repeatedly been brought to the notice of the authorities.

Health Officer's Reports for 1869.

The acting Health Officer of Bombay, Dr. J. Lumsdaine, submitted quarterly reports of the working of the Health Department during the year 1869, considering it of vital importance that matters affecting the public health should be placed before the public whilst an interest still attaches to them. It was also proposed by the Municipal Commissioner to publish, "in a cheap form, Mahratta and Guzerattee "versions of these quarterly reports, to be distributed among the different reading "rooms, and to those (and they are happily many) among the lower classes who "already evince deep interest in the sanitary condition of their neighbourhood, and "are always ready to give effect to the suggestions" of the Health Officer. The above is an extract from a letter (26th May 1869) from Mr. A. T. Crawford Municipal Commissioner for the city of Bombay, acknowledging the receipt of the first report for the quarter ending March 31st 1869. Mr. Crawford continues, "Nothing has struck me more of late than the evident recognition by the more "intelligent of the masses huddled in the worst parts of the town, that mortality "from certain diseases is due to a want of ordinary sanitary precautions, to dirt, foul "water, and the like."

"A few years ago treble the present mortality in any quarter of the town from cholera or small-pox would hardly have excited the attention of the inhabitants. Now one death spreads alarm in a neighbourhood, and the aid of the Health Department is promptly and clamorously invoked. In short the masses are beginning to feel and see that death from these and similar causes is *preventible*. Let us then do all we can to encourage that feeling by bringing facts constantly and clearly home to all."

"The next step will follow in good time. The masses, convinced that disease and death are preventible, will speedily begin to insist that the necessary preventive works shall be undertaken by those responsible for the public health. It must be highly gratifying to all connected with the Health Department to know that the hard and earnest work of the past three and a half years has brought about this healthy feeling in the body of the people."

" Day by day the need for increased water supply is forced upon my attention by piteous appeals from all quarters. I look with great apprehension to the state of the town a year hence if something be not done."

An annual Report, with a resumé of the year's work, is to be submitted.

The deaths for the first quarter are 4,888, more by 931 than for the same quarter of 1868, but less by 314 than the mean for the last 10 years. Health Officer's Report. First quarter of 1869.

The rate is equal to ·59 per cent. of the population as given by the census, and it is made up as follows:—

	Per cent. per population.		Per cent. on deaths for quarter.
Fever - - -	·16	and	27·19
Diarrhœa - -	·02	„	4·13
Dysentery - -	·03	„	5·26
Small-pox - -	·08	„	13·77
Measles - -	·03	„	4·38
Cholera - -	·04	„	7·10
All other causes - -	·23	„	38·17
	·59		100·00

There were 61 inquests and 66 violent and accidental deaths. There were 673 deaths from small-pox. The question of compulsory vaccination was submitted to the Bombay Association, who decided against it. The Health Office urges the reconsideration of the whole subject by the appointment of a mixed Commission to take evidence, their sitting to be public, and their proceedings published.

The advantages of compulsory vaccination are nowhere more strikingly shown than in Ireland, where it may really be said that small-pox has been stamped out:—

From 1830 to 1841 the deaths were				58,006
„ 1842 „ 1851		„	„	38,275
„ 1852 „	1861	„	„	12,725
The compulsory Act was passed in 1864, and was soon in force.	1866	„	„	187
	1867	„	„	20
Up to August	1868	„	„	0

The recorded deaths from all causes for the second quarter of 1869 were 4,871, exceeding for the corresponding period of 1868 by 742, but less by 17 than for the past quarter. The per-centage of deaths to population is ·59, made up as follows:— Health Officer's Report. Second quarter, 1869.

	Per cent. per population.		Per cent. on deaths for quarter.
Small-pox - - -	·12	and	19·58
Measles - - -	·13	„	4·13
Cholera - - -	·02	„	4·39
Diarrhœa - - -	·03	„	4·50
Dysentery - - -	·02	„	3·88
Fever - - - -	·14	„	24·10
All other causes - -	·23	„	39·42
	·59		100·00

The sexual numbers are—

Males -	2,646 =	49 per cent. on	total of males -	530,450
Females	2,225 =	77 „	„ females	286,112
	4,871			816,562

There were 146 still births not included in the above. Of the persons who died 2,926 were born in Bombay, 2,064 elsewhere, and in 27 cases the place of birth was unknown.

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The births registered during the quarter were—

Male - -	591
Female - -	389
	980

3,744 bodies were buried, 1,011 were burnt, and 262 were taken to the towers of silence.

From small-pox there were 954 deaths, being 320 more than for the second quarter of 1868, and 281 more than for the past quarter. Of the 954 who died only one was returned as vaccinated.

Health Officer's Report. Third quarter, 1869.

Of cholera there were 214 deaths, 206 more than the corresponding period in 1868, and 133 less than the past quarter. There were 51 deaths from violence or accident.

For this quarter the total number of deaths has been 4,188, less by 700 and 683 for the first and second quarters respectively, but more by 412 than for the corresponding months of 1868.

There were 143 still-born children not included in the above.

The sexual numbers are—

Males	- 2,261 = ·42 per cent. on total of males		- 530,450
Females	- 1,927 = ·67 „ „	females	- 286,112
	4,188		816,562

Of these 2,467 were born in Bombay, 1,829 elsewhere, and in 35 cases the birthplace was unknown.

3,156 bodies were buried.
934 „ „ burned.
241 „ „ taken to the towers of silence.

The per-centage of deaths to population is ·51, made up as follows :—

	Per cent. per population.	Per cent. on deaths for quarter.
Small-pox -	·01	2·10
Measles -	·00	1·12
Cholera -	·02	3·84
Diarrhœa -	·01	3·20
Dysentery -	·03	6·93
Fever - -	·15	29·68
All other causes	·27	53·13
	·51	100·00

From small-pox there were 88 deaths, against 673 for the first quarter, 954 for the second quarter, and 132 for the corresponding months of last year. The wave line of this disease attains its maximum about March or April, and then drops until December or January.

From cholera there were 161 deaths, against 347 for the first quarter, and 214 for the second quarter, but more by 150 than during the corresponding months of last year, throughout the whole of which there was a very striking immunity.

Health Officer's Report. Fourth quarter, 1869.

For the quarter ending 31st December 1868, the total number of deaths amounted to 3,766, less by 74 than the corresponding quarter of 1868, but more than the average deaths of the fourth quarter during the preceding 20 years by 189.

The deaths of 108 still-born children were also recorded, but are not included in the above; 2,152 deaths of males and 1,613 of females. In one instance the sex could not be ascertained.

The deaths from violence amounted to 53.

Small-pox carried off 10 persons, and cholera 32. Fever accounted for 1,362 deaths, or 455·4 less than the average, and 111 less than in the corresponding quarter of 1868.

The annual rate of mortality during the quarter per 1,000 of population amounted to 18·448, so that the health of the city during the last quarter of the year 1869 was exceptionally good.

The per-centage of deaths to population is ·46, and is made up as follows:—

	Per cent. per population.	Per cent. on deaths for quarter.
Small-pox	·00	·27
Measles	·00	·40
Cholera	·00	·85
Diarrhœa	·01	2·65
Dysentery	·03	8·12
Fever	·16	36·17
All other causes	·23	51·54
	·46	100·00

Health Officer's Report for first quarter of 1870.

The annual Report of the Health Officer for 1869 has not yet been received, but the report for the first quarter of 1870 has been submitted by Dr. T. Hewlett.

The total number of deaths amounted to 3,884 or, exclusive of still-born, to 3,774, being 1,144 less than the corresponding quarter of the previous year, and 22 less than the last quarter of 1869. It is also less by 755·2 than the average deaths of the first quarter during the preceding 20 years. 2,194 deaths were registered as having occurred among males, and 1,690 among females, being in the proportion of 129·82 males to 100 females.

957 bodies were buried.
2,713 „ „ burned.
214 „ „ taken to towers of silence.

During the quarter the deaths from the principal diseases were—

	Deaths.	Per Cent. per Population.	Per Cent. on Deaths for Quarter.
Small Pox	93	·01	2·39
Measles	49	·00	1·26
Fever	1,247	·15	32·11
Cholera	14	·00	0·36
All other causes	791	·30	63·88
	2,194	·47	100·00

The deaths from violence amounted to 86; 18 persons were drowned; 14 were poisoned; 54 lost their lives from various accidents.

Three were only registered during the quarter the births of 436 males and 388 females, or a total of 774 children.

The number vaccinated was 2,982. Of these 1,957 were successful, 684 doubtful, and 341 failed.

Among the prominent events of the quarter stands out the stoppage of the Vehar water supply, owing to a burst of the main, the consequent result being the greatest inconvenience at the Boree Bunder night-soil tanks. The Vehar water was cut off at 9 a.m. of 27th February, and was not turned on before noon of 2nd March.

The stench from the main drain had been excessive during the quarter, and was much complained of. This drain had been cleaned out, and was only to be used for carrying off the monsoon water, but during alterations for increasing the pumping power at the Love Grove sluices the old main drain had to receive the sewage, and hence its offensive state.

Referring to the Committee's report on the water supply, Dr. Hewlett deprecates an amount of water, equal to the daily supply of 29,225 people, being used for such purposes as watering roads and irrigation, and suggests utilizing the large tanks for road watering, so as to save the pure Vehar water. He is also opposed to the Commission's recommendation of the use of dipping fountains, from their liability to

BOMBAY. defilement, and submits a sketch of Messrs. Kennedy's waste water preventive circular wells, and a design for some simple public baths and washhouses.

Dr. Hewlett considers that the question of drainage is much advanced by the very practical remarks of the Commission upon it agreeing entirely in the principles laid down for the disposal of—

1. The solid refuse or garbage.
2. Of the rain water.

Regarding the disposal of the latrine matter, he gives designs for improved privies, and urges the very nccessary increase of latrine accommodation.

Dr. Hewlett also urges the adoption of glazed earthenware pipes instead of brick masonry drains, and points out with reference to the Fort drainage, which the Commission consider should be at once proceeded with and completed, and which involves the establishment of waterclosets, that there is no power under the existing Act to compel owners to substitute waterclosets for privies and hand removal. Such power should be given, and the watercloset system in Bombay could be put on its trial. The fort contained, at the time of the census, 1,123 houses and 41,723 persons, so that a fair trial can be made whether the system is suited to the habits of natives or whether native perversity would render any system of traps or ventilation of pipes inoperative.

Dr. Hewlett disagrees with the Commission's recommendation to retain the existing night-soil reservoirs, as being altogether in the wrong place now the reclamation has extended to deep sea water. He doubts the necessity of any reservoir. If the night soil is to be wasted, arrangements might, he thinks, be made for emptying the carts direct into the sea.

Report of the Commission on the drainage and water supply of Bombay.

This report bears date July 1869. The duty of the Commission was twofold—

(1.) To examine the details of Captain Tulloch's drainage scheme, and the probable outlay involved.

(2.) To consider and report upon Mr. Russel Aitken's schemes for increasing the water supply.

WATER SUPPLY.

The first point to which attention was directed was the water supply. Mr. Russel Aitken, lately executive engineer to the municipality, had submitted four schemes:

1. The Shewla scheme.
2. The Canery scheme.
3. The Toolsee scheme.
4. The Poway scheme.

1. The Shewla scheme was rejected as being too costly, the expense being estimated by Captain Tullock at 180 lacs. The proposal, also, of carrying the water 56 miles in an exposed steel main, was considered too novel an experiment to be tried on so large a scale in the first instance.

2 and 4. The Canery and Poway schemes were objected to as incapable of extension from time to time to meet the growing requirements of the city.

By the last census the inhabitants were numbered at 816,562; in the course of years these numbers must be much augmented, and the Commission considered that in the construction of new and costly waterworks the future as well as the present wants of the city must be borne in mind.

At present the largest proportion of the population limit themselves to a daily supply of two gallons a head* for all purposes. This is "*vastly insufficient*," and the Commission considered that a *minimum* of 15 gallons per head of the population should be provided for domestic consumption, irrespective of what may be required for watering roads, extinguishing fires, flushing drains, and other public purposes.

The present water supply of Bombay is derived from three sources:—

I. The Vehar Lake.
II. Public wells and tanks.
III. Private wells and tanks.

* The Army Sanitary Commission allow 12 gallons per head for every healthy man, woman and child in an Indian military station.

But the public and private wells and tanks are little better than large cesspools, and the only really wholesome water in Bombay is that supplied from the Vehar Lake. From this source about 8,500,000 gallons are daily delivered for the consumption of the city, or something more than 10 gallons a head.

The Commission therefore directed their attention to three points :—

(I.) Whether the existing works at Vehar were in a safe condition.

On this head it was reported that though certain points were considered insecure, and not in a satisfactory state, that at a moderate expenditure (about two lacs) the dams might be made as secure as it is possible to make works of this nature. The Commission recommended that the necessary repairs should be at once taken in hand.

II. Whether the supply from Vehar can be increased without danger.

This, in the opinion of the Commission can be accomplished by Mr. Aitken's Toolsee scheme. He proposes by the construction of a dam to divert the water of the upper portion of that river into the Vehar Lake, so that the present supply might be increased by five or six gallons a head daily. Mr. Aitken is of opinion that if the dams are strengthened as proposed, this could be carried out without danger at an estimated cost of $6\frac{1}{2}$ lacs, including the cost of a second main from Vehar to Bombay.

III. Whether the Vehar water is so distributed as to make it most generally useful.

The Commission made recommendations on this head, among them that all water supplied to private houses should be paid for by meter measurement. The income derived from the Vehar works in 1868 amounted to Rs. 3,96,470 against 3,85,037 in 1867. The Commission considered that the diminution of revenue from cost of alterations in the distribution system might be met by a light water rate.

The Commission therefore recommended the adoption of the Toolsee scheme as a temporary measure of relief, but this would only suffice for a minimum supply for domestic purposes, and an unreliable supply in case of fire. Bombay should be satisfied with nothing less than a continuous service at full pressure. This the Commission consider will be most securely obtained by a low-level reservoir from which the water should be brought by a covered masonry conduit to Bombay. With such a reservoir, not only could the supply of water to Bombay be kept ahead of any possible increase of the population, but all the water not required for Bombay might be made available for the service of towns on the road, for the supply of railways, and for irrigation. In this point of view the work might fairly be regarded as an imperial work, and not one of a merely local municipal character.

Government, in a resolution dated 31st March 1870, concur with the Commission both in their rejection of the other schemes, and the adoption as an *interim* experiment of the Toolsee scheme. It was considered quite clear that, as a permanent arrangement, the city should not be left to depend on one source of supply, liable to suffer from insufficient rainfall or destruction from accident to the impounding dams. Government considered that the present mode of distribution was evidently faulty from the fact of 8,500,000 gallons being delivered, while only 2,153,475 gallons were accounted for, and that it would be advisable to apply meters in all practicable cases.

Government did not concur in considering that the work might be regarded as imperial, but thought that the gross revenue of about four lacs yielded by the works at Vehar should, after providing for maintenance and paying interest on existing debts, leave margin sufficient to cover the interest on a moderate loan for the further extension of the work. The proposal to levy a light water rate, from which houses supplied by meters should be exempted, was considered reasonable.

Drainage.

In considering Captain Tulloch's scheme, the attention of the Commission was directed to two points; 1. Whether it possessed any engineering or sanitary defect, either as regards principle or the mode of applying that principle? and, 2. Whether Captain Tulloch's calculation fairly represented the outlay that would be involved in giving effect to his project?

Every complete system of town conservancy should provide for the removal of the following sources of impurity :—

(*a.*) Solid refuse, *débris* of food, vegetables, &c.
(*b.*) Rain water.
(*c.*) Refuse water from kitchens, baths, &c.
(*d.*) Latrine matter, both solid and fluid.

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The problem to be solved is how best to carry away these impurities to a safe distance from human dwellings, and how to get rid of them in an innocuous, and, if possible, a profitable manner.

(*a.*) Solid refuse is collected by hand, carried by rail nine miles to Coorla, and spread over a tract of swampy ground belonging to the Municipality.

(*b.*) The disposal of rain water is a serious question during four months in the year. The Commission are of opinion that it should be removed, as far as levels permit, by gravitation either into Back Bay or the harbour, and that no rain or storm water that can be otherwise diverted should be allowed to pass through the present drains on to the flats. While, therefore, they agree with Capt. Tulloch in desiring a complete separation of rain from sewage, the Commission do not concur in his proposition to carry off the rain water by underground drains to the present main drain to Love Grove, when it would be pumped into the sea. Mr. Rawlinson says, "Any attempt to provide large sewers to receive tropical storm waters, and steam power to pump the same must either be extravagantly costly or must fail." As the leading feature of Captain Tulloch's project is to pump not only the storm water but the sewage of Bombay into the sea, the Commission consider that it is in that respect objectionable on engineering grounds.

(*c, d.*) Refuse water and latrine matter.—The first question to be considered was whether the nightsoil should be allowed to pass into the drains. The Commission decided against this, from the impracticability of carrying out a system of water-closets and water carriage similar to that in English towns, and from the difficulty of getting rid of the gases engendered by the nightsoil passing into the drains. The Commission consequently considered Captain Tulloch's project objectionable on sanitary grounds, inasmuch as it proposes to carry off all the nightsoil by means of sewers. Though a large per-centage of latrine matter, from the native habits, now finds its way into the drains, it is hoped that this will diminish as the halalcore system is perfected. By the present system the halalcores collect the nightsoil in carts, which carry it to the receiving tanks at Boree Bunder, whence it is discharged by pipe at Carnac Bunder into the harbour. The system is stated to work fairly, but to be susceptible of improvement. A suggestion is made that the pollution of the harbour might be prevented by delivering the sewage at Carnac Bunder into hopper barges, in which it might be taken out to sea and discharged.

Two other methods of dealing with the nightsoil were brought before the Commission.

1. The dry earth system.
2. Captain Tulloch's utilization of sewage for agricultural purposes.

(1.) From the quantity of earth required, and the practical difficulties attending its cartage, distribution, removal, &c., the Commission considered that the dry earth system could not be generally introduced into a large city like Bombay.

(2.) The Commission also deprecated the trial of so gigantic a scheme as Captain Tulloch's for sewage utilization until the results of the experiment at Calcutta are known, especially whether it could be carried on on so large a scale without injury to the health of the neighbourhood. Experiments on a small scale had been carried on by the Municipal Commissioner of Bombay at Love Grove, and with comparative success.

The Commission review the present state of drainage at Bombay, and make suggestions for the improvement of the halalcore service, the careful construction of house connexions in the fort, the enlargement of the nightsoil reservoir at Carnac Bunder, and the necessity of increasing the number of public necessaries.

The Bombay Government concur with the Commission in their rejection of Captain Tulloch's, or any under-ground sewage scheme, and agree with the recommendations submitted in the Report. Their resolution is dated 31st March 1870.

Monthly Proceedings of the Sanitary Commissioner for 1869.

These monthly proceedings have been regularly forwarded, and consist almost entirely of the consideration of details in new buildings connected with barracks, hospitals, and jails, especially at Aden, Ahmedabad, Belgaum, Deolalee, Kurrachee, &c. The following are a few of the other subjects submitted to the Sanitary Commissioner for Bombay during the year 1869.

Prevalence of fever

It appears that for the years 1864 to 1867, inclusive, the average rate of admissions to hospital from fever among the artillery at Sholapoor was about 42 per cent.,

and (the same battery (E. 18) forming the garrison as in 1867) that the average rate in 1868 was nearly trebled, being 145 per cent. Of 167 cases, it is stated that 33 occurred in the first, 58 in the second, 16 in the third, and 60 in the fourth quarter of the year. among the artillery at Sholapoor.

The Medical Officer of the Artillery remarks that there is a tract of marshy ground about half a mile distant, N. by E., from the barracks, which was formerly drained and cultivated; but the direct discharge of these drains have been obstructed by dams, which have been made across their exit channels. The accumulating water has to seek exit by a more circuitous channel, and the drains themselves are for the most part converted into long pools of nearly stagnant water, being very shallow, and constantly choked up with mud and water. The malarious influence of the marsh had been increased during 1868 by an unusually high temperature. In the third (monsoon) quarter of the year, when the tank and water channels are probably full, the cases of fever are few.

It was considered that the proper drainage of the marshy ground, the provision of well-constructed channels for conveying away the superabundance of water for irrigation, and cleaning out and deepening the tank would undoubtedly conduce to the better health of those residing in the neighbourhood.

Propagation of cholera by railway.

This subject has also been under consideration in the correspondence of the preceding year. Instructions were issued regarding the conveyance of the bodies of those who had died from cholera or any infectious disease, the Station Master being held *personally responsible* for seeing that the directions are strictly carried out.

Prevalence of syphilis at Poona.

The Inspector General of Hospitals forwarded correspondence on this subject, and recommended that immediate measures should be taken to establish a Lock Hospital for the city and camp at Poona. The surgeon of the 23rd Regiment Native Infantry brought to notice the greatly increased prevalence of syphilis, and that the character of the disease was so virulent that it was probable that many of the men who suffered from it will have to be invalided within a few years. He understands that the disease is contracted from prostitutes who have been expelled the bazar and now frequent the neighbourhood of the regimental lines. The Cantonment Act was made applicable to Poona in June 1868, but no legal power exists for dealing with prostitutes who live beyond cantonment limits, and who when diseased will not abstain from consorting with men, or submit voluntarily to treatment and discipline in an hospital.

The Cantonment Magistrate states that the subject of establishing Lock Hospitals is under consideration.

The Sanitary Department has frequently urged on Government the expediency of establishing Lock Hospitals at stations where much inefficiency among the soldiery is caused by venereal disease. In the case of Poona it was considered that the matter seemed to rest with the local military authorities.

Analysis of water.

Instructions were issued for obtaining reports on the potable waters of the Bombay Presidency, in accordance with the recommendation of the Army Sanitary Commission, transmitted with the despatch of the Secretary of State in Council of the 24th June 1869, No. 15, Sanitary Department.

A despatch was received from the Government of Bombay, dated 27th November, No. 38, 1869 (Public), inclosing a report from Inspector General Dr. Wright, referring to difficulties in the way of carrying out the proposed detailed analyses of Indian waters. Dr. Wright considered it questionable whether many officers are qualified for such work, and, even if qualified, that the present state of the Department would not permit of their removal for the purpose; that young men going to Netley for the Indian medical service should be specially trained in water analysis, and the names of those best qualified submitted to Government; that a uniform method of analysis should be adopted throughout the Presidency; and that there should be a specially appointed staff of analysts acting under the Sanitary Commissioner.

Dr. Wright's report was referred to the Army Sanitary Commission, who communicated with Dr. Parkes, Professor of Hygiene at Netley, who informed them that for many years past every medical officer receiving especial instruction at Netley has been trained in water analysis as one of his current regimental duties; that numbers of men have been sent to India who are very expert analysts; that it would be easy to prepare a list of the best of them, and that this, although suggested three years ago, had not been carried out because it might place the others at a disadvantage.

The Army Sanitary Commission (letter dated 8th July 1870) apprehended that there would be no difficulty in procuring from Dr. Parkes the names of competent

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analysts in such a manner as to avoid the disadvantage alluded to, and that the work might be carried out under such arrangements as the authorities in India may direct. These remarks have been forwarded to the Government of Bombay.

Dr. Macnamara, in conjunction with Dr. Angus Smith, is engaged in preparing a uniform method of water analysis for India.

Malarious fever.

With reference to a copy of a letter from Dr. Sutherland, of the Bengal Army, on the causes of fever in Bengal, submitted for report by the Government of India, the Sanitary Commissioner remarks that the effect of road, railway, and canal construction on the health of the population so located as to be affected by such works, with special reference to the production by them of marshy land, had not hitherto arrested attention in Bombay, but that much useful information might be collected by means of careful inquiry, followed by well-considered expression of opinion from Government employés, revenue, police, medical, and civil, as well as officers connected with irrigation, railway, and road communications. The opportunity was taken to point attention to a large work in progress in the vicinity of Poona, with the important object of an abundant water supply to that city and cantonment, involving, however, it was understood an arrangement for a canal *to bring under irrigation for the first time* a large extent of ground along its course. It seemed obviously desirable, under the sad experience furnished by the irrigated districts of the North-West Provinces, that complete arrangements for the absorption or removal, or suitable impounding of the water that may be discharged or that may escape from the canal along its course should be carefully considered and efficiently carried out.

This record of the sanitary work of the past year cannot be better concluded than by asking the special attention of all interested in the subject to the following remarks which have been kindly contributed by Miss Nightingale.

London, 1870.

I have been asked to say a few words on the present aspect of the work of Sanitary Improvement in British India, having had the privilege of being allowed some share in it, ever since the Royal Commission on the sanitary state of the Indian army first collected its evidence from every station in India, and I was desired to give my opinion on that evidence, both as regards Her Majesty's troops and the civil and native populations.

Without farther apology, then, and as the evidence now coming in on the native populations is infinitely fuller than ever it has been before, I will try to say my few words as follows :—

I.

I. 1. Beginning to improve. Inspecting and reporting.

1. Much need not be said on the difficulties of beginning to improve. The question in its practical shape was new. But it was not the less grappled with at once by the Government of India; rather tentatively, as was fitting. The administrative recommendations of the Royal Commission were at first adopted; but as the practical action contemplated in these recommendations was not followed up, reveral changes in the arrangements were made—further changes appear to be under discussion—at present the work is to a large extent inspectorial and reporting, although much real work has been done nevertheless.

The Inspectors are gradually bringing to light what is the real social state of the mass of the Indian peoples. And it is difficult not to feel that next to education, if not before education, stands the great and useful work for the Indian Government and people which these inspections raise up and present before our eyes to be done.

Their reports have removed any veil of romance woven by poets over Hindostan, and show us peoples to be numbered by tens of millions living under social and domestic conditions quite other than paradisiacal.

I. 2. Habits of native races.

2. These reports reveal to us great nations and races, subjects of the same Queen, after a social existence of twenty centuries, less or more, living amidst their own filth, infecting the air with it, poisoning the ground with it, and polluting water they drink with it. [Some of them even think it a holy thing to drink filth.]

Habits of cleanliness are inculcated as matters of doctrine by most Eastern religions. Have these habits degenerated in India into mere "washing of cups and platters and such like things," while all the weightier precepts of the laws of health are passed over with little or no notice?

For many ages the people of India were more civilized and more cleanly than almost any nations of Europe. Why has this condition of things been in later days reversed? Now they are generally as bad as, sometimes worse than the worst of our own people here in Europe.

Not only habits of personal cleanliness, but the provision by the State, or by private charity, of pure air and pure water, and of means of keeping the earth pure and wholesome, are inculcated by most eastern religions, however much they may vary in other respects. Why should these precepts of personal and social purity which are universally true and useful be forgotten? They have no necessary connexion with any contested questions of moral or intellectual belief.

I. 3. Land under water. Cholera perennial the result.

3. There are great tracts of country, especially in Lower Bengal, liable to all manner of irregularities in the relations of land and water to each other. This is well known. But the hand of man appears to have introduced few or no compensating processes or works.

The only escape from pestilence appears to be when the country is under water. As soon as the land begins to appear, pestilence appears with it. And so on year after year.

Must we not sum up the results, so far as health is concerned, by the words, perennial cholera, dysentery, fever, sometimes like plague, affecting first the people on the spot, then overflowing into unaffected districts and stations, decimating the troops, passing the boundaries of India, and devastating Asia, Europe, and Africa. [Is not this the history of the great Cholera pestilences at least?]

To judge from the reports, this seems the established chain of events at the present time.

Cholera intensifies itself. At first it scarcely attracts attention. After a time it covers more ground and becomes more fatal. Then it overflows its accustomed limits, and spares neither race, class, age, nor sex. It becomes the deadly connecting link between the filthy habits of the lowest classes in Bengal and the highest civilization of the western nations. It comes into existence among the hot moist vapours of the wet, undrained, uncultivated deltas of the Ganges and Brahmapootra, and it spreads and spreads till it ultimately claims its victims in almost every climate in the world.

I. 4. Inspecting and reporting should go on till it awakens us.

4. It is always well to know the worst. And this inspecting work should be continued until the state of every village in India is laid bare (although the Bombay Health Officer, all honour be to him and to his activity, does make a piteous appeal to us to let him work and not report).

The sheer logic of facts, if nothing else, will compel our selfishness to help forwards a higher civilization in that vast empire. But I should be wrong if I seemed to appeal merely to selfishness; the force of public opinion in England, particularly in a strong interest in the affairs which concern the health of our Indian native fellow subjects, has been steadily growing here for the last 12 years.

I. 5. India a country of villages.

5. At first sight the problem to be dealt with appears to be of such vast extent that its solution is almost hopeless. But the very extent of the problem results from the great subdivision of its parts, and this subdivision is of immense advantage in dealing with it.

With numerous large and populous cities and towns, India is nevertheless essentially a country of villages.

In all jungly parts of the country, many sanitary difficulties are habitually settled by bodily removing the village to a new site, and this habit often continues long after the people have ceased to be what their more settled neighbours would call "real junglees." If the children or the chickens die, or "mother small pox" or "mother great plague" visit the village, the people disperse, the elders burn the huts, and when they re-assemble select a new site for the village.

Even in Calcutta, the general conflagration of whole "bustees" (the collection of native mat huts which are interspersed among the brick palaces) was, and is perhaps still, looked on as the natural and wholesome mode of making a clearance.

And certainly the great fire of London, two centuries ago, though we had not sense enough to look at it in this way, was really the sanitary improver, which did in our place, in a more summary manner, what we ought to have done. It was a sanitary blessing and the only way to avoid greater evils. But in these days, although Charles Lamb did tell us that the Chinese burn down a house to roast a sucking

pig, we should not exactly recommend, if London, Calcutta, or any town or village were in a bad sanitary state, as the only sanitary remedy: burn it!

Our Indian inspectors tell us much of the conditions, fatal to health, under which population exists in both towns and villages.

I. 6. Municipalities and their works.

6. The town populations are neither better nor worse than are the villagers so far as their habits are concerned, but the town populations have not the same facilities for preserving health as the villagers might have. Towns everywhere require certain classes of works which individual householders have no power to execute. Many of these Indian cities and towns have Municipalities, but many of these Municipalities have no money.

In one or two instances, do not parts of the great drainage city-works appear to have been more or less copied from the so-called "Cloaca Maxima" at Rome? and is not that the most useless, costly, and mischievous of all ancient sanitary models which time has spared?

Hence there is "no balance at the bankers."

A negative result is often a very good thing, if only it compels people to think and not to copy bad models in future.

But alas! in the meantime a large extent of Calcutta has to be left undrained. Bombay appears to have been frightened; and have not certain professional people proposed to deal with these cities as if they were villages? Lo! is there not such an art as sanitary engineering?

II.

II. Facts, not opinions, wanted.

Also, has not some uncertainty been thrown over the whole subject of Indian public health questions by intruding into it theories of disease? The intention is of course to obtain some central principle of action. But as no two people in search of such a principle ever probably arrived at the same, the general result of this method of dealing with public health questions is to amaze practical people, and to afford a good reason for doing as little as possible.

The public health question is not a question of opinion. It is a question—

1. Of what is fact?
2. Of what is practicable and expedient?

However ingenious a theory may be, the wisest thing is never to expend public money on it.

Are not the theories we have had, too, not of Indian produce, but of European manufacture?

And have they in reality anything whatever to do with public health problems?

The questions to be dealt with are either questions of fact or they are nothing. No speculative matter should ever peep out of or creep into public health reports intended to lead to practical action.*

III.

III. 1. Progress reports, practical proposals wanted.

1. None of the reports received here, so far as we know, except those for Calcutta and Bombay, give engineering proposals for improving the public health among the larger groups of population, especially as regards the introduction of works and methods of procedure long familiar in Europe.

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* From any quarter which will help us to understand questions of public health, light is welcome; but is not the usual procedure of disease theories to take some one fact, and to found a whole chain of consequences upon it, leaving out all other facts and the consequences which follow from them. Then, as there are people who know these other facts, these people, not deficient in intelligence, put in an inconvenient oar, and call in question the authority of the one-fact philosophies and their conclusions.

May I just say that recent reports afford striking illustrations of this; *e.g.* one German professor tells us that cholera is a fungoid disease; another, that it springs from some special condition of the ground water. The Government has an inquiry instituted, and the first result is, that there are no special cholera fungi in India; the second, that cholera has assumed great intensity where there is no ground water at all. Others state explicitly that cholera *excreta* are the special *foci* of cholera. But then we find cholera spreading in great intensity where cholera *excreta* are dealt with in conformity with this theory, and not spreading at all (as in the hospitals of Calcutta) where they have not been so dealt with. Another lays all the blame on cholera poison getting into water, unconscious, apparently, that cholera has committed ravages where no such occurrence could possibly have taken place.

These are but a few flowers from the garden of theories; but should these gardens be cultivated at all where the struggle with cholera is a dreadful, too dreadful reality, and not a book theory?

Now, may I give an instance of wise reserve from Dr. Smith's Report on Bengal, where one of the medical officers teaches us a lesson we all should learn?

"Perhaps after the epidemic which has prevailed lately among cattle in England, and the experience which has been gained therefrom, but which led to no better result than an order for the indiscriminate slaughter of all beasts affected with it, more allowance will be made for the difficulties and honest doubts of those whose lot it is to treat cholera in its chosen home, I hope especially that a confession of ignorance will not be taken as an admission of stupidity."

Some of them recognize more or less fully the advantages which would arise from such works, but what is really wanted is this:—

Progress reports, such as those of the Municipal authorities of Calcutta, showing:—1. The increase of sewering and draining; 2. Improvements in water supply and distribution; 3. Surface drainage, filling up ditches, &c., and the like; or else cleansing reports like those of the Bombay officer of health, showing the real amount of work done.

We want *Progress reports* from every part of India, for stations, cities, and villages.

III. 2. Military stations; improvements wanted, not only new barracks.

2. The improvement of Indian military stations, as has long since been shown, involves the consideration of questions of surface and subsoil drainage, water supply, removal of sewage from buildings, improved barrack and hospital construction, improvements in existing barracks and hospitals, and last, though by no means least, sanitary improvement of native towns and bazaars in the vicinity of military stations.

Referring to these health-requirements, the Army Sanitary Commission, in their "Suggestions for the sanitary improvement of Indian stations," nearly seven years ago, laid down the following general principle:—

"No improvement in barrack or hospital accommodation will compensate for a malarious subsoil or for bad water; and on the other hand, no improvements in drainage and water supply will neutralize the influence of an ill-ventilated badly constructed overcrowded barrack and hospital. And even if these works were carried out, much removable sickness would still exist, unless the men's leisure were profitably occupied and the sanitary police of bazaars and towns efficiently attended to."

In the documents received here no reference is to be found to the surface or subsoil drainage of stations, no reference to sewering of buildings. Dry earth conservancy is apparently the only thing attended to, although is it not simply a matter of common knowledge that the dry earth system makes little difference in the amount of dangerous impurity contained in the fluid sewage of a station or town? There is no reference to improved water-sources or improved methods of distribution for any military station. But Bengal Presidency has done the next best thing, in having had an exhaustive examination made of many of its water-sources, and the result is this: very few can be depended on for pure water; some are extremely impure and consequently dangerous.

There is no reference to cleansing measures for filthy native towns near stations, except such reference as shows how excessively filthy these towns are. Some of them, indeed, appear never to be free of cholera, and then people wonder that cholera attacks troops who live near them or frequent them.

The one measure which has been extensively carried out, is building new Barracks—some of them apparently on a more costly scale than necessary for the station or climate, all of them apparently without the necessary ground measures, without which no new building is of much use.

There cannot be a doubt that at many stations, new barracks were necessary, and that they will eventually prove of the greatest benefit to the public service, but ought not more care to have been bestowed in keeping them cool?

And *is* one rigid plan and rule of construction everywhere necessary? or would it not, financially, have been better to have had the stations carefully examined one by one, on the ground principles mentioned above? and, then, a general plan of improvement laid down for each station, having special reference to the class of works required to remove disease causes?

We are afraid that the result shows that this would have been the wiser plan, for these new barracks have not been free (nor could it have been expected) from miasmatic diseases, incident, not specially to the old barracks, although no doubt bad barrack accommodation added to the mischief; but to undrained locality, to malaria-generating country near the station, to filthy native towns in the vicinity, or to bad water.

III. 3. Sanitary measures for military stations.

3. There are perhaps very few stations, except those in low, flat, wet alluvial plains, where malaria proceeds from unregulated waters, or water-logged subsoils and bad agriculture, which might not be readily placed in healthy condition, if the energetic powers of Indian Administrators, with a Governor-General and Commander-in-Chief, zealous and able, were to be applied to this work. Our recent cholera experience, indeed, proves that there is no time to be lost. We cannot endure to see die a regiment a year by cholera in the Bengal Presidency, especially with such an experience before us as that of Madras Presidency, viz., that places of pilgrimage

which used to be the continual foci of cholera, have been for years kept free of the disease by sanitary measures.

The prisons of Northern India afford similar experience, and not an hour should be lost in dealing with the military stations.

III. 4. Sanitary measures for towns near stations.

4. If there must be stations close to unhealthy towns, one of two things must follow: either towns as well as stations must be put into a safe sanitary state, or British soldiers must die of cholera. There is no third way possible, as all agree.

With such unhealthy stations and towns as Allahabad, it might be worth while, if practicable, to hold some one responsible for putting the whole place to rights, vesting him with absolute powers. If this cannot be done, then what other alternative is there but to remove the troops to the nearest spot that is safe, if Allahabad cannot be given up as a station?

The same may be said of Peshawur, where so many of the finest troops in the British army have been destroyed.

It is admitted now by our highest authorities, that a station placed near enough to a native town to be injured by it, or by a village too large for entire removal, is badly placed, strategically and politically, and should be moved. Most of our stations have been placed hap-hazard, hence many are close to such towns or villages, and should be moved. In the case both of Peshawur and Allahabad, the evils complained of should be corrected at once, whatever the expense.

It is believed that the last Commander-in-Chief most wisely ordered all troops out of Allahabad except two companies in the fort.

The mistake of trying to keep more than a strong out-post at Peshawur, if the communication across the Indus can be perfected, is admitted in theory, though not yet recognized practically.

III. 5. Sanitary engineering.

5. Has not much of the mischief resulted from want of sanitary engineering? And sanitary engineering is a specialty. It does not come by nature.

No one expects a first-rate physician to be a first-rate operative surgeon, although he knows surgery.

Though there are engineers in India, the work of the sanitary engineer is not done.

Water supply.

A sanitary engineer does not use open unprotected wells, dug in foul subsoil, for supplying troops with water, as in some places. And scarcely does he bring water by open cuts in the ground, as in other places. Nor does he leave the stations without so primitive a contrivance for drawing water as a hand-pump, let alone a steam pump, as in all places.

May a single fact in last year's Bombay Presidency sanitary report be quoted as an instance of the condition of water-supply? All the drownings reported, 1,608 in number, took place in wells and tanks. No fewer than 1,100 dead bodies were taken out of wells during the year in this Presidency alone.

Liquid sewage.

What, too, becomes of the liquid sewage of stations?

Does it not go into the subsoil?

And it stays there, because it has nowhere else to go.

A sanitary engineer would scarcely run his sewage, or allow it to run into the subsoil.

What Nature asks.

Is it too much to ask, and if we don't ask the question, Nature asks it so loud that we *must* answer—she asks that the stations be subsoil drained, properly sewered, sufficiently supplied with good water for all purposes of health, she asks that the bazâars and native towns near be cleansed and kept clean.

This question she goes on asking, and it is not a sufficient answer to her to build barracks.

She does not take this answer, but just goes on levying her own cess in her own way till we give her the answer she requires.

She does not care about agents, but only about results.

If there are agents there who can do the work, she says: "Set them to work."

If there are not, "Send for them."

The work to be done is great and will be costly. But a beginning might be made.

The worst stations are well known, and might be grappled with in detail.

IV.

IV. 1. Town populations.

1. However extensive the stational improvements required may be, but they are a small matter when compared with those required for the civil population?

How great a work there is before the Government of India!

But the work is so great that the Government cannot accomplish it by itself.

In two capitals, Calcutta and Bombay, much has been already done; and the death rate actually reduced to below that of London in the case of Bombay, below that of Manchester or Liverpool in the case of Calcutta.

Madras has not been so active. She endures herself a high death rate by not doing for herself what she has done for her pilgrims; and her abominable river is still more abominable than ever.

In other large cities there are active Municipalities all more or less engaged in improvements.

But the true key to sanitary progress in cities is, water-supply and sewerage.

True key to sanitary progress in cities: Water supply and sewerage.

No city can be purified sufficiently by mere hand-labour in fetching and carrying.

As civilization has advanced, people have always enlisted natural forces or machinery to supplant hand-labour, as being much less costly and greatly more efficient.

The Army Sanitary Commission have shown in their "Suggestions" that the steam engines belonging to London water companies will do as much work for a shilling as 900 men can do in a day of eight hours. Shall a shilling's worth of work continue to be done in India by 900 men in a day or by one man in 900 days?

Other boards and other "guardians" have, however, been unwilling to change—More unwilling perhaps than energetic India. But they have had to change. No one can stay behind when once public opinion and the march of events say—Move.

Indian Municipalities are moving. Let some one city be completely set to rights as an example; and let the Government encourage such a work.

Poona is a good example of the need of action: a large city of 70,000 or 80,000 people, a camp bazar of nearly 20,000 more, many villages and smaller camp bazars about, and two large military stations; good natural climate, good water to be had, and good soil.

Dr. Leith showed what was needed, by an excellent report years ago, viz.: 1, drain city, camps, and villages, *not* into the reservoir which supplies the great part of Poona's water; 2, open good streets; 3, give good water; 4, improve the barracks. Something is being done to give good water and barracks, but nothing to drain. The great town and camp still drain into the sub-soil or into the reservoirs of water for the poor people.

2. The most enormous work will, after all, lie with the villages; and it is in the villages that unhealthy conditions appear to exist almost in greatest intensity. Read the details given in Dr. Smith's Report on Bengal, in Dr. De Renzy's Report on the Punjaub, Mr. Planck's on the North West Provinces, Dr. Townsend's on Cholera in the Central Provinces! Do not they show why cholera weighs so heavily on these village populations?

IV. 2. Village populations.

Dr. Townsend tells us that only last year 4,100 villages in his district, having a population of over 2,000,000, were attacked with cholera, which carried off 47,848 of the inhabitants—a mortality of 22 per 1,000 from cholera alone.

Bearing in mind that these cholera epidemics are constantly doing their destructive work in India, we may form some idea of the immense suffering and loss inflicted.

Bearing in mind the enormous number of villages in India, we may see that no Government could do the work required, although no people could do it without the Government. All that a Government can do in such circumstances is, to collect and make known the facts; to bring them and their consequences to the knowledge of the people; to help them with advice and to encourage their efforts by examples. But the people themselves will have to do the work. Fortunately, little engineering is required for villages.

Is not the main thing wanted a good cleaning out to begin with, then some local means of keeping the villages clean? Arrangements for storing the manure of each house and cattle stand at the village outskirts would be required; but these need only be of a very primitive kind. Roads through villages require to be repaired, the surface to be levelled and drained, holes to be filled up, new and properly constructed wells to be dug, and better methods of drawing and distributing water to be provided. The people might be required to find the labour. A few model dwellings, or even a model village in each district would do much good among peoples who are essentially imitative. A few simple rules for keeping their villages healthy might be drawn up.

[An octavo volume is not wanted; a dozen lines may be made to hold much wisdom.]

If these things were done, and if Government provides inspection, with the occasional advice of a sanitary engineer, where required, it is certain that the good results would be immediate, and in time the people would be able to look after their own health.

The work is easiest of all in villages dealt with individually. A good collector or commissioner, with power to order and to spend a little money, patience, and a good native prime minister, might get everything done by the people themselves.

Elementary instruction on laws of health, especially as regards social and domestic habits, should be given in Government schools.

The work is one of health; but it is also a work of education and civilization. Would it not be well to introduce some elementary knowledge of physiology and the laws of health into the teaching in Government schools? especially as regards social and domestic habits.

Would it not do good in two ways—as acting on parents (and villages) through their children and on the children themselves in after life?

We learn from the highest authority, that at Bombay it was the young medical students of the Grant Medical College, and their friends in the Elphinstone College, who made the sanitary improvement of Bombay possible. And at a recent meeting held in Calcutta, for discussing a Report on Cholera by Dr. Murray, the most comprehensive and practical treatment of the whole subject was contained in an address by a native Indian Physician.

V.

V. What has been done.

A great work of a certain kind has nevertheless been accomplished in India—astonishing when one realizes the conditions of that vast empire—a work of giants. And indeed our great Indian administrators are giants, even in these days. Great things have been done in sanitary legislation in the last years. Many Commissioners have been zealous in doing their difficult duty to the people over whose interests they are placed. Inspectors and medical officers have made signal efforts in the same direction. The work of Municipalities must not be forgotten, nor the large sums spent by them in improving the public health; nor the building of new barracks and hospitals, nor the other improvements at military stations which have been carried out at a great cost and on an extensive scale.

There is life where there was none before. There is increasing interest in the work of protecting the public health. And a large amount of the most indispensable information is being collected by the Sanitary Commissioners.

What remains to to be done.

What is wanted now, as we shall all agree, is practical work.

The people themselves must help. There is plenty, too, for the higher powers to do.

The texts from the reports received are many and admirable.

We could preach from them for a year. But we would rather work from them.

Are not the simple facts that India is a hotbed of malaria and the Ganges Delta the breeding ground of cholera, sufficient to show in what direction the Government of India should work for the public health, a work in which it is certain that the people can do little or nothing for themselves?

Are not the simple facts that in India whole provinces, which in Europe would be kingdoms, are living in habits little higher than those of the lowest class of animals, sufficient to show how the people, encouraged and instructed by their own landowners as well as by British authorities, might work for their own health—a work in which it is certain that no Government can do much for them?

(Signed) FLORENCE NIGHTINGALE.

In another paper which is printed in the Appendix (page 288), Miss Nightingale has pointed out that portion of the great work of thorough sanitary reform which must be carried out by the people themselves without the special intervention of Government.

CHARLES C. PLOWDEN,
Sanitary Department, India Office, 1870.

ABSTRACTS

OF

SANITARY REPORTS

OF

1868.

MAP
to illustrate
THE
ANNUAL REPORT
OF
THE SANITARY COMMISSIONER
WITH THE GOVERNMENT
OF
INDIA.
1868.
Scale of English Miles
NOTE – Area covered by cholera shewn by yellow tint.
The yellow dots indicate a few, generally solitary cases, occurring almost all of them in the month of August.
BAY OF BENGAL
Mouths of the Ganges
CULF OF CUTCH
GULF OF CAMBAY
HYDERABAD
BOMBAY
CALCUTTA
DACCA
PATNA
AGRA
DELHI
LUCKNOW
ALLAHABAD
BENARES
LAHORE
PESHAWUR
CABUL
KHELAT
GRANDAHAR
Mount Everest
Katmandoo
Karakoram pass
Cape Negrais
Cape Comorin
Point de Galle
Trincomalee
Vizagapatam
Madras
Pondicherry
Cuttack
Akyab
Chittagong
Sylhet
Cachar
Munneepoor
Assam
Bhutan
Nepaul
Sikkim
Thibet
Cashmir
Jeypoor
Jodhpoor
Ajmeer
Oodeypoor
Bhopal
Indore
Jubbulpoor
Nagpoor
Sattara
Kolapoor
Goa
Surat
Baroda
Ahmedabad
Rajkot
Bhooj
Kurrachee
Hyderabad
Jeysulmeer
Bikaneer
Sukkur
Jacobabad
Dadur
Quetta
Ghuznee
Candahar
Herat
Cabul
Peshawur
Lahore
Umritsur
Loodhiana
Ferozepoor
Meerut
Delhi
Agra
Gwalior
Lucknow
Allahabad
Benares
Patna
Calcutta
Dacca
Jubbulpoor
Nagpoor
Sattara
Kolapoor
Goa
Surat
Baroda
Ahmedabad
Rajkot
Bhooj
Kurrachee
Hyderabad
Jeysulmeer
Bikaneer
Sukkur
Jacobabad
Dadur
Quetta
Ghuznee
Candahar
Herat
Cabul
Peshawur
Lahore
Umritsur
Loodhiana
Ferozepoor
Meerut
Delhi
Agra
Gwalior
Lucknow
Allahabad
Benares
Patna
Calcutta
Dacca
Jubbulpoor
Nagpoor
Sattara
Kolapoor
Goa
Surat
Baroda
Ahmedabad
Rajkot
Bhooj
Kurrachee
Hyderabad
Jeysulmeer
Bikaneer
Sukkur
Jacobabad
Dadur
Quetta
Ghuznee
Candahar
Herat
Cabul
Peshawur
Lahore
Umritsur
Loodhiana
Ferozepoor
Meerut
Delhi
Agra
Gwalior
Lucknow
Allahabad
Benares
Patna
Calcutta
Dacca

ABSTRACT OF THE FIFTH ANNUAL REPORT OF THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA, 1868.

THIS Report is submitted by Dr. J. M. Cuningham, Sanitary Commissioner with the Government of India; it bears date 15th September 1869, but was not received at the India Office till the 11th January 1870. It is divided into four parts:—

I.—European Troops.
II.—Native Troops.
III.—Jails.
IV.—General Population.

PART I.

EUROPEAN TROOPS.

The strength of the European force in the Bengal Presidency during 1868 averaged somewhat less than it did in 1867, and considerably under the number at which it stood during the years immediately previous.

Since 1859, although the number of stations occupied by British troops has undergone little change, the strength of the garrisons has steadily diminished; a fact which implies a generally increased space per head, and which should, therefore, not be lost sight of in comparing the sanitary results of the different years:—

Year.	Average Strength.
1859	55,104
1860	48,901
1861	44,879
1862	42,980
1863	41,351
1864	40,385
1865	37,210
1866	35,013
1867	33,784
1868	31,560

In calculating the ratios of deaths and diseases in 1867, the average strength for 10 months only was adopted; for 1868, the actual average of the 12 months, or 31,560 men, has been adopted as the basis of calculating the ratios of the year. The late arrival of many of the recruits in 1868 has an important sanitary bearing. Some of the drafts reached India so late that it was considered advisable to detain them at Kurrachee and Chinsurah until the return of the cold weather, and the mortality of young men at both depôts was very heavy.

Death-rate of 1868.

During 1868, out of an average strength of 31,560, there were 635 deaths, including those which occurred both in and out of hospital,* or a ratio of 20·11 per 1,000. Singularly enough this ratio corresponds exactly with the death rate among European soldiers in 1866, and the results of 1866 and 1868, as will be

* Out of hospital, 46.

INDIA.

seen from the following comparison, are the most favourable which have yet been attained:—

Year.	Ratio of Deaths per 1,000 of Average Strength.	Year.	Ratio of Deaths per 1,000 of Average Strength.
1859	45·35*	1864	21·10
1860	36·77*	1865	24·24
1861	45·93*	1866	20·11
1862	28·11*	1867	30·95
1863	25·08*	1868	20·11

Chief causes of mortality.

Arranged according to the degree in which each contributed to form this death rate of 20·11 during the past year, the various diseases stand in the following order:—

		Ratio of Deaths per 1,000.		
		1868.	1866.	1867.
Died in hospital.	Hepatitis	3·42	2·71	2·57
	Fevers	2·88	3·23	2·63
	Apoplexy	2·78	1·57	2·40
	Cholera	1·81	1·37	13·84
	Phthisis	1·55	1·57	1·36
	Dysentery	1·52	1·68	1·97
	Heart disease	1·36	1·00	1·16
	Respiratory diseases	·79	1·23	·84
	Delirium tremens	·38	·37	·40
	Diarrhœa	·19	·49	·40
	Wounds and accidents	·16	·40	·29
	Atrophy and anæmia	·10	·34	·17
	Dropsy	·03	·06	·14
	Scurvy	0	·09	·03
	Small-pox	0	·11	·12
	All other causes	1·68	2·20	1·62
Died out of hospital		1·46	1·69	1·01
TOTAL		20·11	20·11	30·95

The death rate of 1868 presents a remarkable contrast to that of 1867, the chief cause of difference being under the head of cholera, from which disease the British soldiers enjoyed remarkable immunity during the year under review.

Chief forms of sickness admissions *into hospital.*

Arranged in the order of the proportion of admissions into hospital from each during 1868, the chief diseases stand as follows:—

Diseases.	Admitted per 1,000.		
	1868.	1867.	1866.
Fevers	462·4	465·7	468·3
Venereal diseases	199·2	166·6	217·7
Abscess and ulcer	105·9	86·4	101·3
Wounds and accidents	103·6	94·5	98·2
Diarrhœa	79·2	93·9	88·8
Respiratory diseases	70·9	66·2	81·4
Rheumatism	68·2	76·2	80·8
Hepatitis	51·0	52·8	60·7
Dysentery	34·9	36·9	40·2
Eye diseases	27·2	32·8	32·0
Phthisis	10·1	9·8	8·8
Apoplexy	7·6	5·8	3·2
Spleen disease	5·0	6·5	6·5
Delirium tremens	4·4	4·2	4·3
Cholera	2·7	20·9	2·3
Scurvy	0·8	1·0	1·8
Small-pox	0·4	0·8	0·8
All other causes	204·8	191·5	204·6
TOTAL	1438·4	1412·5	1501·7

* In Dr. Bryden's tables of these five years, the ratio of deaths out of hospital is given separately. The total death rate from all causes is shown in the figures of this statement.

It will be observed that more than one half of the whole admissions during the past year were due to the three first diseases on the list, and that fevers and venereal affections together contributed 661 out of every 1,438 cases of sickness in each 1,000 of average strength.

Admissions in 1868 compared with those of previous years.

In the statement which appears in the last paragraph the results of 1868 are compared with those of the two previous years. The similarity of the ratios in many instances is remarkable. During the three years, for example, the admissions from fevers do not vary six in the 1,000. Similarly trifling are the variations as regards dysentery, eye diseases, and phthisis. In the case of delirium tremens the figures are almost identical. Cholera and heat apoplexy, on the other hand, present marked differences. The total admission rate of the year, compared with each of the preceding nine, shows the following results :—

Year.	Admissions per 1,000 of Average Strength.
1859	2228·5
1860	2051·5
1861	2045·6
1862	1970·8
1863	1838·4
1864	1641·6
1865	1605·3
1866	1501·7
1867	1412·5
1868	1438·3

The highest monthly ratio during 1868 was reached in June, 168·2 per mille, and the lowest, 85·3, in February; in all the other months, except February, it exceeded 100 per 1,000.

The admission liability of June is usually somewhat lower than that of several of the other months. The relatively high ratio of that month in 1868 was doubtless connected with the late appearance of the rains, and the consequent trying nature of the season, and also to the fact that with a scanty rainfall, the latter months of the year were more healthy than ordinary.

Liability of soldiers to sickness and death in each month.

Two very interesting statements have been prepared by Dr. Bryden to show the ratio of liability of European soldiers to sickness and death in each month. The calculation is based on the average of five years, but cholera is excluded, as its course is so fitful and variable from year to year, and the statistics regarding it, if included in the total, would have altogether deprived the data derived from other diseases of their value.

STATEMENT showing the Comparative Liability of European Soldiers to Sickness in each Month of the Year.

	Totals of Five Years, 1864–68.	Ratio of Admissions in each Month per Cent. of all Admissions (taken on the Average of Five Years).
January	18,750	6·87
February	16,089	5·90
March	19,657	7·20
April	21,683	7·95
May	26,300	9·64
June	25,758	9·44
July	26,337	9·65
August	26,678	9·77
September	25,350	9·29
October	25,651	9·40
November	22,007	8·07
December	18,618	6·82
Total	272,878	100·00

INDIA. STATEMENT showing the Comparative Liability of European Soldiers to Death in each Month of the Year.

	Totals of Five Years, 1864–68.	Ratio of Deaths in each Month per Cent. of all Deaths during the Year.
January	211	6·28
February	159	4·73
March	170	5·06
April	191	5·69
May	249	7·41
June	422	12·56
July	399	11·88
August	326	9·70
September	347	10·33
October	330	9·82
November	275	8·19
December	281	8·35
Total	3,360	100·00

From these figures it appears that on a series of years the admissions into hospital do not vary much during the six months, May to October, while in the other six the ratio is considerably less. As regards deaths more marked differences appear in individual months. June, July, and September, and in a minor degree August and October, are the most dangerous to life, presenting a decided contrast in this respect to the other months of the year.

General characteristics of 1868.

The general characteristics of 1868 considered as a whole are a small admission rate, a minimum proportion of daily sick, and a death ratio per 1,000 exactly the same as that of 1866—the most favourable yet recorded. The year is further remarkable for the unusual number of admissions and deaths in the month of June, the high ratio of mortality from heat apoplexy, the comparative freedom from cholera, which was almost unknown over great part of the country, and the very slight prevalence of malarious disease in the later months of the year. Such are the chief facts regarding the sanitary history of the European army in Bengal taken as a whole.

A tabular statement showing the total of admissions of mortality, with the ratio of principal diseases, in the various Provinces of the Bengal, will be found at page 54.

Bengal Proper.

The mortality in Bengal Proper (28·66 per 1,000) was considerably higher than that of any of the other groups. Compared with 1867 (14·38 per 1,000) the results are very unfavourable, but in 1862, 1863, and 1864, the death rate in this province varied from 20·60 to 26·45, and in the other years between 1859 and 1866, it fluctuated between 18·92 and 50·98 per 1,000. Of the 59 deaths which occurred during 1868, 12 were from dysentery, 11 from cholera, 11 from hepatitis, and 9 from fevers. With these exceptions the fatal cases under each head were but few. The daily sick-rate 70·9, and the admission-rate 1,757 per 1,000, are considerably higher than the average of each for the whole army, and are ascribed chiefly to the great prevalence of fevers and of venereal diseases.

Of the first, there were 571 admissions per 1,000, compared with an average of 461 for the whole Presidency, and of the second, there were 307 per 1,000, compared with 199. The fact that 633 soldiers out of only 2,059 were treated for venereal affections in Bengal Proper during the year under review is very unsatisfactory, and shows that Lock Hospitals had not produced the beneficial effect desired. These unfavourable results found their most exaggerated form amongst a small body of men at Berhampore. The ratio of daily sick here averaged 153, and the admissions 2,486 per 1,000 during a period of nine months. From fevers alone the admissions were at the rate of 1,605, and venereal cases alone amounted to 272 per 1,000 of average strength. The mortality of 45·98 per 1,000 was also excessive. These results may be accounted for in great measure by the fact that the 2/25th Regiment, in which they occurred, had just landed in the country. If the total deaths in the wing stationed in Bengal be included (for some of the men

were temporarily quartered at Barrackpore and Dum-Dum) the ratio of mortality rises to 52·34 per 1,000. And this fact becomes the more instructive when compared with the death-rate in the other wing stationed at Shahjehanpore which amounted to only 22·63 per mille. In the Sanitary Reports of the Presidency circle, the fevers prevailing at Berhampore are attributed to the "swampy nature of the country," but it does not appear how far this evil is capable of remedy or what measures have been adopted to mitigate it. The danger of detaining soldiers in the Lower Provinces during the early years of service in India is forcibly illustrated by these data, and the fact also comes out very clearly from a consideration of the statistics of the Chinsurah Depôt during the past year. The men at this depôt were all recruits, and are not included in the strength of the province as shown in tabular statements. During the cold season they are constantly changing, as different drafts arrive and are passed up-country, and any statistics founded on the sickness and mortality occurring among them during the short period usually spent in depôt, would therefore disturb the general results as affecting men residing in the province throughout the year. During 1868, however, owing to late arrival in the country, nearly 300 recruits were detained at Chinsurah throughout the hot weather and rains, and the statistics of the depôt are in consequence very unfavourable. During the eight months from April till November, out of an average of 275 men, there were 21 deaths, most of them from cholera. It is most desirable in a sanitary point of view that all recruits should arrive as early as possible in the cold weather, and be drafted from the Lower Provinces before its close.

Chinsurah.

Agra.

The results of sickness and mortality in the second and third groups are more satisfactory. In the fourth group (Agra and Central India) cholera was more prevalent than in any other, and proved fatal to 3·36 per 1,000. But, although epidemic and appearing in four out of eight stations, the disease was limited in extent and less fatal than it has usually been of late years to those attacked. At Jubbulpore the admissions from fever of only 380 per 1,000 presents a very favourable contrast to the returns of previous years. During the past cold season Dr. Cuningham inspected this station, and was satisfied that very much might be done to diminish the amount both of fever and dysentery which have prevailed at it. Good drainage works have been partially carried out, but a much more extended scheme is required, and much good will no doubt result from adopting the practical suggestions which have been made for improving the cantonment. The swamps which surround it on three sides can be drained with great facility, and the black cotton soil, which is found here and in other stations of the Central Provinces, appears to be particularly well adapted for an experimental trial of sub-soil drainage. Omitting the stations occupied by small detachments, the admissions from venereal diseases in this group have ranged between 153 per 1,000 at Agra and 189 at Jubbulpore.

Punjab.

The main body of the European army, amounting to 12,576, was stationed in the Punjab, and occupied 22 stations. Within the whole of this area not a single British soldier was attacked by cholera, a remarkable contrast to the 476 admissions and 283 deaths from the disease in 1867. The death-rate of the province, 15·67 per 1,000, has been favourable. Of this, fevers caused 3·34, and apoplexy 2·79. With these exceptions no single disease contributed two casualties per 1,000. The ratio of cases of sickness, 1,498 per 1,000, was high, but the average proportion of daily sick, 45, shows that many of them must have been of a comparatively trivial nature. Fevers numbered 516 per 1,000, and venereal diseases 154. This latter ratio presents a favourable contrast with the statistics of the disease in any of the other groups, but the result is to be attributed more to the fewer facilities for contracting infection which appear to exist in the Upper Provinces than to a more efficient working of the Lock Hospitals. The highest ratio of fever cases, 1,881 per 1,000, occurred at Lahore Fort, the lowest (omitting small detachments) at Sealkote, 263 per mille. Venereal admissions varied from 201 per 1,000 at Peshawur to 74 at Nowshera. At neither of these stations had Lock Hospitals been established.

INDIA.

STATEMENT showing the Admissions per 1,000 of average Strength from the chief Diseases in the different Groups.

YEAR.	Cholera.	Smallpox.	Fevers.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Phthisis Pulmonalis.	Scurvy.	Rheumatism.	Venereal Diseases.	Eye Diseases.	Abscess and Ulcer.	Wounds and Accidents.	All other Causes.	TOTAL.
BENGAL PROPER.																			
1866 -	3·4	0	663	3·9	4·8	104	143	81	5·3	54	9·6	0·5	77	230	22	89	91	227	1,812
1867 -	3·1	0	341	2·5	11·9	71	125	76	10	76	9·3	0·6	79	245	16	118	139	348	1,677
1868 -	7·3	0	571	2·4	14·1	113	95	65	1·5	66	4·8	2·0	36	307	13	135	102	218	1,757
DINAPORE, BENARES, OUDE, AND CAWNPORE.																			
1866 -	4·7	1·3	308	3·0	4·3	52	81	64	6·4	63	8·9	1·4	74	306	44	99	88	194	1,407
1867 -	5·8	0·8	259	1·8	3·3	39	71	53	3·7	47	9·4	0·7	64	194	32	93	86	190	1,159
1868 -	2·4	0·2	241	6·1	4·6	36	69	49	4·3	57	8·9	0·2	76	254	28	114	116	248	1,318
MEERUT AND ROHILCUND.																			
1866 -	0·8	1·2	241	3·8	4·1	33	69	62	5·5	80	8·0	0·8	81	215	25	112	99	232	1,278
1867 -	3·3	2·3	324	2·3	4·2	39	103	60	6·9	75	1·2	2·1	123	193	50	90	82	211	1,417
1868 -	0·5	0·2	322	5·9	4·0	31	63	77	4·6	74	1·0	0·2	69	186	25	98	86	181	1,241
AGRA AND CENTRAL INDIA.																			
1866 -	0·2	0	877	3·0	6·5	44	131	51	6·5	88	6·3	1·2	90	209	33	101	104	237	1,992
1867 -	5·4	0	837	14·	7·1	32	93	52	9·6	75	8·9	1·0	66	200	35	98	101	216	1,854
1868 -	5·8	1·9	533	4·3	4·8	19	57	57	5·8	63	16	0·2	63	175	30	107	118	172	1,439
PUNJAB.																			
1866 -	0	0·6	517	3·2	3·6	18	75	56	7·4	94	7·1	3·1	81	150	26	99	105	184	1,435
1867 -	35	0·7	567	7·8	2·7	29	103	45	6·8	69	7·7	0·9	68	111	28	71	97	154	1,406
1868 -	0	0·2	615	11·	2·9	27	79	37	5·7	77	7·8	1·2	67	154	26	97	97	188	1,498

STATEMENT showing the Deaths per 1,000 of average Strength from the chief Diseases in the different Groups.

YEAR.	Cholera.	Smallpox.	Fevers.	Apoplexy.	Delirium Tremens.	Dysentry.	Diarrhœa.	Hepatitis.	Spleen disease.	Respiratory diseases.	Heart disease.	Phthsis Pulmonalis.	Dropsy.	Scurvey.	Atrophy and Anæmia.	Wounds and Accidents.	All other causes.	Died out of Hospital.	TOTAL.
BENGAL PROPER.																			
1866 -	1·93	0	3·37	2·41	0	3·38	·96	3·86	0	3·37	·49	2·41	0	0	0	·96	4·82	·96	28·92
1867 -	2·50	0	0	·62	·62	1·87	·62	5·00	0	·63	0	0	·63	0	·63	·63	·63	0	14·38
1868 -	5·34	0	4·37	·97	·49	5·88	0	5·34	0	·49	0	·49	0	0	0	0	2·91	2·43	28·65
DINAPORE, BENARES, OUDE, AND CAWNPORE.																			
1866 -	2·89	·11	3·98	1·40	·32	2·36	·43	3·33	0	·32	1·29	1·07	0	·22	·32	0	2·89	1·61	22·54
1867 -	3·76	·31	1·57	·94	·52	1·25	·21	2·92	0	·21	1·15	1·15	0	·10	·10	·42	1·47	1·04	17·12
1868 -	1·48	0	2·02	3·76	·27	1·35	·67	2·69	0	1·08	2·29	1·48	·13	0	·13	·13	1·61	1·88	20·97

STATEMENT showing the Deaths per 1,000 of average Strength from the chief Diseases in the different Groups—*continued.*

YEAR.	Cholera.	Smallpox.	Fevers.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.	TOTAL.
MEERUT AND ROHILCUND.																			
1866 -	0	·20	1·64	1·42	·41	·82	0	2·45	0	1·22	·82	2·24	0	0	0	·41	1·63	1·22	15·30
1867 -	28·49	0	3·58	1·90	·63	3·58	0	1·47	0	1·25	1·48	1·48	·42	0	·21	0	2·11	1·06	48·66
1868 -	0	0	3·27	2·40	·22	·66	0	7·20	0	·44	1·31	1·31	0	0	0	0	·43	1·31	18·55
AGRA AND CENTRAL INDIA.																			
1866 -	·23	0	6·95	2·55	·70	1·39	·23	3·71	0	1·62	·70	1·16	·23	0	0	·93	1·16	2·55	24·11
1867 -	3·30	0	3·06	4·24	·94	2·12	·71	3·06	0	·47	1·18	1·41	·24	0	0	0	1·88	2·12	24·73
1868 -	3·36	0	1·20	2·40	·24	·48	0	3·60	0	·48	·95	2·16	0	0	·24	·48	1·68	·95	18·22
PUNJAB.																			
1866 -	0	·15	1·97	1·21	·38	1·06	·53	1·90	0	1·21	·61	1·29	·08	·08	·30	·38	1·59	1·67	14·41
1867 -	20·86	·07	2·87	3·24	·07	1·70	·52	1·92	0	·89	1·18	1·25	0	0	·07	·37	1·39	·74	37·14
1868 -	0	0	3·34	2·79	·56	1·27	·08	1·83	0	·80	·95	1·03	0	0	·08	·16	1·59	1·19	15·67

As regards the ratio of sickness and mortality, the statistics of 1868 and 1866 correspond much more nearly than those of 1868 and 1867. The similarity between 1868 and 1866 becomes the more striking when the monthly admissions from fever in each year are compared. At the same time there is also a contrast. In Meerut and Rohilcund, in both years, the maximum of fevers was reached in the hot months, and the same occurred in the Punjab. In 1868 the maximum was reached in the Oude and Cawnpore group in June, but in 1866 the greatest number of admissions from this cause took place in October.

STATEMENT showing the Number of Admissions from Fevers in each Month of 1868 and 1866.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL.
DINAPORE, BENARES, OUDE, AND CAWNPORE.													
1868 - -	44	62	102	112	145	279	277	216	250	138	95	74	1,794
1866 - -	127	68	144	214	277	212	269	251	349	541	296	128	2,876
MEERUT AND ROHILCUND.													
1868 - -	65	27	65	99	148	204	178	174	170	98	110	139	1,477
1866 - -	34	23	61	125	171	122	148	114	148	82	34	97	1,159
AGRA AND CENTRAL INDIA.													
1868 - -	181	114	105	134	167	271	261	211	270	200	170	142	2,226
1866 - -	134	83	152	209	290	207	223	349	554	689	541	354	3,785
PUNJAB.													
1868 - -	364	192	250	367	934	1,357	723	795	763	693	694	605	7,737
1866 - -	325	224	208	290	1,071	832	994	708	652	649	448	427	6,828

How far these various phenomena are capable of explanation by the meteorology of the different years in different parts of the country is a matter deserving of

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careful inquiry. A memorandum is given by Mr. Blanford, the Meteorological Reporter for Bengal, on the characteristics of 1868, but from want of data regarding former years, the comparison is restricted in great measure to Calcutta.

The chief characteristics of the meteorology of Bengal during 1868 were a prevailing high barometric pressure, low temperature, and excessive total rain-fall. It would appear from the records of the Calcutta observatory that, notwithstanding this last feature, the mean atmospheric humidity was less than the average, and has been decreasing for the last 16 years. But the apparent change can hardly be accepted as an established fact, and would in any case apply to Calcutta only.

The excessive rain-fall was felt only in Lower Bengal; to the W. and N.W. there was a deficiency of rain-fall.

"In Bengal, Calcutta is the only station which at present can furnish a continuous register for many years. A comparison of the principal meteorological elements of 1868, with their corresponding averages for the period of 16 years during which hourly observations have been recorded, yields the following results:—

	Barometer.	Thermometer.	Humidity.
	Mean 1868.	Mean 1868.	Mean 1868.
January	30·025+·016	67·6+0·7	71—4
February	29·948+·008	72·8—0·7	68—2
March	·859+·026	80·5—1·	67—4
April	·757+·017	84·5—1·4	69+2
May	·655+·109	86· —1·7	73+1
June	·543+·009	84·9—1·3	81+3
July	·536+·048	83·5+0·7	85 0
August	·592—·006	83· +0·3	86+1
September	·634—·002	83.2—0·1	85+1
October	·834+·028	81·4+0·8	78—4
November	·966—·003	74·7+0·3	73—5
December	30·029+·023	67·8+0·9	72—5
Mean	29·781+·023	79·1—0·2	75·6—1·3

Rain-fall.

	Mean.	1868.
January	0·41	—0·36
February	0·76	—0·58
March	1·13	—0·97
April	2·13	+ 3·34
May	5·78	+ 0·02
June	12·64	+13·97
July	13·19	— 2·02
August	14·70	+10·13
September	10·94	+ 4·75
October	5·46	—3·93
November	1·09	—1·09
December	0·10	—0·10
Total	68·33	+23·16*

"The wind directions of past years have not yet been sufficiently discussed to admit of a similar comparison.

"Thus it appears that the months of January, February, and March, and October and November were drier than the average both in point of invisible humidity of the atmosphere and in the amount of rain-fall; and that the excessive rain-fall of the year was due mainly to the very heavy falls in June and August."

Dr. Murray Thomson (Meteorological Reporter, North-western Provinces), gives a comparative summary of the weather of 1868 in the North-western Provinces of India. (Page 15 of Report.)

His observations are, however, confined to three stations, Roorkee, Agra, and Benares, and include the five last years only.

* These statements should be read in this manner:—The rain-fall in Calcutta during 1868 was 91·49, or 23·16 in excess of the average of 68·33.

Meteorology in Punjab.

Dr. Neil, the Reporter for the Punjab, gives a summary of the meteorology of that Province for 1868; he divides the year into two periods of six months each, from January to July, and from July to December.

During the first six months of 1867 the rain-fall throughout the Province generally was very scanty. At the same time it is worthy of notice that the month of May 1868 taken alone had not nearly such a heavy rain-fall as May 1867, in which cholera was widely spread over the Punjab. In May 1867 the fall registered at 32 stations totalled 65·9 inches; in May 1868 it was only 21·9. It seemed to be, as it were, reserved for the proper rainy season. In the same period of 1868, on the other hand, an unusual quantity fell, and this fall was shared by each month. For example, in April, May, and June 1868 more rain fell in the Punjab than may usually be expected during these months; in the present year (1869), these months, except in a few places, have been comparatively rainless. During the latter period of each year (1867 and 1868) matters were in a manner reversed. In July 1867 the rain began early, and was much more plentiful than during July 1868. Exceptions have to be made, however, in regard to some stations, *viz.*, those ranging along the north-eastern boundary of the Province from Syalkot to Rawalpindi, where the rain was more abundant in the latter month. The direction of the wind being more steadily easterly in these stations during July 1868 accounts, no doubt, for the difference. The greatest difference in the amount of rain in the two latter periods was to be observed in the month of August. During this month of 1867 the rain-fall was very general and abundant. Not a day passed during which rain did not fall in some parts of the Province, and altogether the fall averaged nearly five times more than that for August 1868. The wind was more steadily easterly also than during the latter period. There are no points to be observed during the remaining months of either period.

Temperature.—The annual mean temperature was altogether about 1° higher in 1868 than during 1867. During the early part of 1868, however, as rain was more frequent, the mean temperature in many places was considerably less, but from July to December it exceeded in most places that of the same period of 1867. The temperature in the sun's rays up to July 1867 was generally greater than during the same period of the following year, no doubt for the above reason. During the cold month of both years the wind varied principally between W. and N.E., westerly winds most frequent up to the month of May, when easterly winds increased in frequency. From June to August the winds were mostly from an easterly direction, but varied very much.

In most of the stations the wind was more variable during 1868 than in 1867. To this circumstance and to the greater fall during the previous cold weather are probably due the scarcity of rain at the proper time in 1868. In Mooltan, south-westerly currents seem to bring most rain. On the frontier, north-easterly, and on the eastern boundary of the Province, easterly and south-easterly currents may be looked upon as the principal rain-bearers.

Inefficiency from different diseases.

In the subjoined statement it will be seen that the first rank is occupied by venereal diseases, which shows how much still remains to be accomplished in carrying out the measures for its prevention.

APPROXIMATE ESTIMATE of the Daily Inefficiency caused by the chief Diseases during 1868. (The calculations are made on the number remaining in Hospital at the close of each month.)

DISEASES CAUSING INEFFICIENCY.	NUMBER REMAINING IN HOSPITAL AT THE CLOSE OF EACH MONTH.												Average number inefficient throughout the 12 months.	REMAINING IN HOSPITAL PER CENT. OF STRENGTH.												Average daily inefficiency during the 12 months per cent. of strength.
	Jan. Str. 26,634.	Feb., Str. 28,178.	Mar., Str. 29,348.	Apl., Str., 32,460.	May, Str. 32,646.	June, Str. 32,609.	July, Str. 32,942.	Aug., Str. 33,124.	Sep., Str. 32,997.	Oct., Str. 32,553.	Nov., Str. 32,231.	Dec., Str. 32,495.		January.	February.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	
Fevers - -	176	135	143	218	457	510	336	419	448	388	272	226	311	·66	·48	·48	·67	1·40	1·56	1·02	1·26	1·36	1·19	·84	·70	·99
Dysentery and Diarrhœa.	53	57	67	116	111	93	122	162	116	98	98	89	98	·20	·20	·22	·36	·34	·29	·37	·49	·35	·30	·30	·27	·31
Hepatitis - -	53	64	53	71	99	120	138	130	134	83	67	53	89	·20	·23	·18	·22	·30	·37	·42	·39	·41	·25	·21	·17	·28
Respiratory diseases	72	66	65	72	101	109	113	124	116	100	81	84	92	·27	·23	·22	·22	·31	·33	·34	·37	·35	·31	·25	·26	·29
Venereal affections -	397	433	427	433	412	348	353	311	319	335	299	309	365	1·49	1·54	1·43	1·34	1·26	1·07	1·07	·94	·97	1·03	·93	·95	1·16
All other causes -	525	494	565	634	620	736	768	757	760	643	569	553	635	1·97	1·75	1·89	1·95	1·90	2·26	2·33	2·29	2·30	1·98	1·77	1·70	2·01
Total remaining -	1,276	1,249	1,320	1,544	1,800	1,916	1,830	1,903	1,893	1,647	1,386	1,314	1,590	4·79	4·43	4·42	4·76	5·51	5·88	5·55	5·74	5·74	5·06	4·30	4·05	5·04

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Cholera in 1868.

Only 87 cases and 57 deaths occurred throughout the year, compared with 722 cases and 479 deaths the year previous (1867).

In the Punjab there was not a single case, and in the Meerut and Rohilkund districts there were but two, both occurring at the station of Meerut.

The mortality among the recruits at Chinsurah and in the wing of the 25th Regiment at Berhampore has been already noticed. Cholera appeared in epidemic form at Lucknow and Jubbulpore, but was of limited extent.

At Lucknow the disease commenced with a solitary case in April, followed by six in August, one in September, and one in December. Of these, seven were in the 102nd Regiment, one in the Artillery, and one the solitary case which occurred at the close of the year, in the 5th Lancers. Among women and children at Lucknow there were three cases and two deaths. At Jubbulpore 16 men were admitted and 12 died; 11 women and children were also attacked, and of these eight died. The disease was confined to the months of April, May, and June. From a special report on the epidemic at Jubbulpore, it appears that it first broke out among the married people of the 2/12th, whose quarters were overcrowded and deficient in ventilation. They were the nearest barracks to the regimental bazaar. The disease was of a very virulent type, 85·70 per cent. of those attacked having died. In all but one case there was premonitory diarrhœa.

Order regarding record of movements on account of cholera issued during 1868.

The modification of the original orders regarding movement into camp on account of cholera which was made in 1868 was noted in last Annual Report (p. 143). As under this order only such buildings are to be vacated as have actually presented cases, it became necessary that a very careful record of the progress of the epidemic among the individual body of men, women, or children who occupied each building so vacated should be preserved, and the following supplemental General Order by the Commander-in-Chief, dated 30th July, was accordingly issued:—

"The following additions to be made to General Order No. 159, dated 9th May 1868, page 99—

"In all cases where buildings have been evacuated on account of the appearance of cholera, a very careful record of the further progress of the epidemic among the individual body of men, women, and children who occupied each building so vacated is to be submitted on the disappearance of cholera through the Quarter-Master General for the information of His Excellency the Commander-in-Chief and Government, prepared according to the annexed form:—

PROGRESS REPORT of CHOLERA at _____ in Her Majesty's _____ Regiment submitted in accordance with Government Order No. 246, dated 30th July 1868.

Station.	Corps.	Number or Name of Building.	Number and Details of Occupants.	Date of first Case.	Date of Evacuation of Building.	Number of Cases before Evacuation.	Number of Cases and Deaths among these Occupants after Evacuation.

_____ Surgeon, in charge.

_____ Commanding _____ Regiment."

Cost of moving into camp in 1867.

In order fully to complete the history of the cholera epidemic of 1867, it may be noted that the cost of the movements into camp consequent on the wide-spread prevalence of the disease in that year amounted to Rs. 1,23,216. The statement prepared by the Examiner of Commissariat Accounts shows that the extra expenditure was distributed over thirteen stations, the heaviest charges having been incurred at Peshawur, Meerut, and Meean Meer.

Dr. Bryden's report on cholera.

Dr. Bryden, the Statistical Officer, whose tables appended to the annual Sanitary Reports have been such a valuable contribution to our knowledge of the extent and distribution of disease, has prepared a very careful review of the facts regarding cholera in the Bengal Presidency during the last 42 years, and a statement of the conclusions which he has formed with reference to them. The facts, which Dr. Bryden has collected with great labour, present a mass of most useful and

valuable information which has never before been placed on record. The statistics contained in the appendix to his report include the particulars of the disease among European and Native troops since 1826 and among prisoners since 1835. Whatever opinion may be entertained regarding the deductions drawn from these figures, they certainly deserve most careful consideration, and the details themselves are of special interest and value.

Special investigation into the fungoid and other theories of cholera.

At the suggestion of the Army Medical School at Netley, two medical officers, Drs. Lewis and Cunningham, who were first in their respective lists for the British and Indian Medical Services, were selected to conduct a special investigation into the mode of origin and spread of cholera in India. The points more particularly suggested for inquiry were the fungoid theory of the disease advanced by Professor Hallier, of Jena, and the views entertained regarding the influence of the sub-soil water by Professor Pettenkofer, of Munich. In order that they might be made fully acquainted with these opinions, and with the best manner of conducting the investigation for testing their accuracy, Drs. Lewis and Cunningham, before proceeding to India, visited Germany and spent some days in interviews with Professors Hallier and Pettenkofer, and also with Professor de Barry at Halle. Since their arrival in this country in the early part of the year they have been in Calcutta, where there is ample opportunity of pursuing their inquiry for some time to come. Sanction has been accorded to the supply of whatever apparatus they require at the public expense, and they have been left to follow their own views and method of investigation, direction and advice being available both from the Medical and Sanitary authorities whenever sought for. The plan of operations which has been adopted is shown in the following memorandum which the two inquirers have prepared. In a climate like that of Calcutta, scientific investigations are conducted with great difficulty, and it is only by a very patient and painstaking effort that these difficulties can be surmounted and reliable results obtained. Whether the results will prove of a positive or of only a negative character remains to be seen. The investigation is one of great interest and importance, and must give a new impulse to our study of cholera in India:—

"On the 16th February we were summoned to attend a meeting of the heads of the Medical and Sanitary Departments convened for the purpose of deciding on the course to be pursued in initiating the investigation as to the cause of cholera. It was then determined that the first point to be entered upon should be the German fungal theory and the experimental evidence on which it is founded. At the same time it was considered advisable that steps should be taken to initiate observations on Pettenkofer's theory, by establishing observations and registrations of the sub-soil water level and its variations in and about Calcutta.

"We shall briefly state how far we have been able to pursue these investigations and what results have been obtained.

"I.—As to the German fungal theory and its evidence,—

"Owing to the delays necessarily involved in fitting up a laboratory with the necessary apparatus, &c., it was not until the middle of April that any systematic series of observations could be entered upon. Since that period continuous series of observations have been and are still in progress as to the asserted connexion of fungi with cholera. These observations have consisted in careful and systematic examinations of cholera evacuations and the changes taking place in them during decomposition as compared with healthy evacutions and the changes occurring in them, as well as in other fluids and solids during the same process. These changes have been studied as occurring under various circumstances, associated with various substrata and media. In addition to the above experiments, others on the effects of cholera evacuations on growing rice plants have been entered upon. Careful daily observations have been made, and notes and *camera lucida* drawings of all the changes observed to occur have been accumulated.

"As far as the observations have as yet gone, they have not been confirmatory of those of Hallier. For, though fungi have frequently appeared on choleræic materials, yet—1st, several species have appeared; 2nd, the same species have occurred in abundance on other substrata in like circumstances; 3rd, the species observed have not belonged to the cholera series of Hallier.

"As yet, however, it would be premature to draw any definite conclusions in the matter, as any series of observations on such points is beset with innumerable difficulties and fallacies, necessitating careful and frequent repetition of each experiment before coming to a final decision as to the value of its results.

"II.—In regard to the theory of Pettenkofer and its experimental trial,—

"1st.—A regular series of observations and registrations of sub-soil water level has been instituted in various places in Calcutta and the neighbourhood.

"2nd.—The Meteorological Reporter to the Government of Bengal has arranged that observations on sub-soil water level and soil temperature be taken in various stations in Bengal.

"3rd.—The Sanitary Commissioner for Oudh has undertaken similar observations in four jails in that province, selected on account of their respective liability to and exemption from cholera.

"In conclusion, we have gratefully to acknowledge the ready aid which we have received from all quarters to which we have had recourse in instituting these preliminary inquiries."

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Small-pox in 1868.

Only 14 cases of small-pox occurred among the European troops in 1868, and there was no death from the disease. In 1862 there were only 13 admissions from small-pox, but two of them proved fatal. In 1858 there were 313 cases with 75 deaths, in 1859, 122 cases with 18 deaths. Of late years the returns have been much more favourable, but the results of the past year are the most satisfactory of all. It appears that two of the cases occurred at Benares, three at Agra, and three at Jubbulpore. At the other places in which the disease appeared it was confined to isolated cases. During the eight months, April to November, no admission took place from small-pox. These very satisfactory results, although apparently evidence of improved sanitary conditions, and especially of a more thorough protection by means of vaccination, cannot be altogether ascribed to these causes, but are also to a great extent illustrative of the peculiarly non-epidemic character of the year. During the last few months the disease has again been much more prevalent. Up to the end of April 88 cases and 9 deaths had been reported in the European army of the Presidency during 1869. The question of providing separate hospitals for the treatment of small-pox patients had been under the consideration of Government. During the last ten years 840 cases have been treated, but they have been spread over a large area, and the number occurring annually at any individual station has not been great.

Fever in 1868.

Fourteen thousand five hundred and ninety-four cases of fever were treated during the year. The maximum of admissions was in June (2,209), the minimum in February (441). The admission rate was highest in the Punjab, 615 per 1,000, and lowest in the second group (Dinapore, Benares, Oude, and Cawnpore, 241 per 1,000). The mortality was highest in Bengal, or 4·37, and lowest in Central India, where it was only 1·20 per 1,000.

Typhoid fever.

During 1868 the number of cases of typhoid fever was considerable. Out of the total of 91 deaths from fever, 35, more than one third, are ascribed to the enteric or typhoid form of disease, but exactitude in the statistics of fever is difficult from similarity of different types. The liability of the British soldier in India to typhoid fever has not hitherto attracted the attention it deserves. It appears that the disease almost exclusively attacked young men, generally those who were in their first year of service in India, and that it was almost entirely confined to the hot season.

How much the disease was confined to recruits and new regiments in their first year of Indian service will appear from the following statement:—

STATEMENT showing the AGES at which DEATHS from TYPHOID FEVER occurred, and the Stations, Corps, and Months in which they took place.

Station.	Corps.	Months.	Age.	Number.	Remarks.
Chinsurah	16-A. R. A.	February	23	1	Recruits.
"	22-7	July	23	1	
Barrackpore	7th Fus.	September	23	1	
Lucknow	102nd Regt.	June	23	1	First year in Bengal Presidency.
"	"	"	25	1	
Seetapore	8th F. R. A.	August	20	1	First year in India.
Shajehanpore	22-5th "	June	31	1	
Bareilly	8th D. "	August	20	1	Recruits.
Roorkee	79th Regt.	"	19	1	
"	"	January	18	1	
Muttra	11th Hussars	April	26	1	First year in Bengal Presidency.
"	"	June	29	1	
"	"	September	24	1	
Jullundur	92nd Regt.	May	21	1	
"	"	June	21	1	
"	"	"	18	1	
"	"	"	23	1	
"	"	"	19	1	
"	"	"	15	1	
"	"	"	20	1	
"	"	"	20	1	
"	"	"	24	1	
"	"	August	19	1	
"	"	October	22	1	First year in India.
Fort Lahore	85th Regt.	June	19	1	
"	"	"	19	1	
Meean Meer	"	May	21	1	
"	"	"	31	1	
"	"	"	23	1	
"	"	July	21	1	
"	"	August	24	1	
"	"	"	27	1	
"	"	September	20	1	
"	"	"	26	1	
"	"	December	23	1	
Rawulpindee	1-6th Regt.	June	TOTAL	35	

Special reports were made regarding the prevalence of Typhoid fever in the 11th Hussars at Muttra, the 85th Regiment at Mean Meer, and the 92nd at Jullundur. Dr. Vain, the surgeon of the 11th Hussars, attributes its appearance "in the first instance to a lowered standard of health from long confinement on "board, in an ill-ventilated and crowded transport, living for three months on salt "rations, in some instances followed by scurvy, fatigue in marching through "the jungle from Khundwah to Mhow, the men not being acclimatized; or, "in other words, not knowing how to take care of themselves in a climate new "to them; improper clothing at Mhow during the rainy season, breaking up "fresh soil for garden ground to the windward of the Mhow Barracks in black "soil, and faulty situation of the horse lines as regards the barracks during the "monsoon, the emanations from the lines being necessarily borne into the "barrack-rooms by the wind. Latterly the hospital itself at Mhow became "a centre of pestilence and had to be abandoned." The disease he believes to have been imported from Mhow into Muttra. Every precaution was taken to prevent its propagation by disinfecting the evacuation of all who were suffering from it, and subjecting the barracks and hospital to fumigation. Nine cases occurred, but three of these had suffered from it at Mhow.

85th Regt. Mean Meer.

The 85th regiment was largely made up of recruits and young soldiers. There were 11 cases of typhoid fever. The surgeon was inclined to attribute the disease to the water though there was no evidence of pollution.

92d Regt. Jullundur.

Ten deaths from typhoid fever occurred in the 92nd regiment. Shortly before embarking for India, 135 recruits had joined the corps, whose average age was but 19 years 2 months. Diarrhœa was also prevalent during the voyage.

The particulars with regard to the outbreak of this disease in individual regiments are of much interest; but in considering the question which is one of great importance in reference to the health of the army in India, the statistics must be regarded from a general point of view. It must be borne in mind that the disease was not confined to any particular station or regiment, but that it appeared almost exclusively among young men recently arrived in the country. The subject will not be lost sight of, and in next annual report an attempt will be made to collect all the facts bearing on it which can be gathered from the history of previous years.

Typhoid fever in Kurrachee depôt.

Before leaving the question for the present, it should be mentioned that typhoid fever also proved very fatal among the recruits for this Presidency, who owing to their late arrival in the country, were detained at the Kurrachee depôt during the hot weather and rains. Nine of them died from this cause, all young men under 24 years of age. Three were 20, one 21, three 22, and two 23. If these deaths be added to those already tabulated, the results, as regarding age, become even more striking than before. Out of the total of 44 casualties from typhoid fever all but seven occurred in men under 25.

Apoplexy in 1868.

But if typhoid fever be specially a disease of young soldiers, apoplexy—and in this country nearly all these cases may be taken to mean heat apoplexy—is peculiarly fatal to the old. During 1868 no less than 241 admissions into hospitals were due to this cause, and of these all but 14 were admitted in the months of June, July, August, and September. The maximum of 114 in any one month occurred in August. The variations in the ratio of seizures in the different groups is worthy of notice. With a minimum of 2·41 per 1,000 in Bengal Proper, they rose to a maximum of 11 in the Punjab. In this last province 144 cases were treated; of these 144·91 occurred in troops marching to the frontier campaign in August, but of these only 13 ended fatally, a ratio of loss much below that generally due to the disease. Doubtless many of those entered as labouring under apoplexy were suffering only from solar exposure in a minor degree, combined with the effects of fatigue. The unusual prevalence of heat apoplexy must be regarded as one of the chief features in the sanitary history of the year. The ages of those who died from apoplexy present a remarkable contrast to those of the men who died from typhoid fever. Of the 92 deaths from heat apoplexy returned in the age statement, only 16 were under 25 years of age. The ratio of mortality from this cause is nearly double among the older men.

Dysentery and diarrhœa.

There were 48 deaths from dysentery, and only six from diarrhœa. The rates of admissions from the first was 34, from the second 79 per 1,000; the total mortality of the two together was 1·71 per 1,000. The most favourable result in previous years was a death rate of 2·17 in 1866. The same influences which are favourable to apoplexy and heat fever, a high temperature and a dry atmosphere, would appear to diminish bowel complaints.

Hepatitis.

In its two forms, acute and chronic, 1,611 cases occurred, and of these 108 were fatal. The ratio of admissions (51 per 1,000) corresponds almost exactly with that for 1867 (52 per 1,000), and compares favourably with results of other years. The death rate, 3·42, was higher than in 1867 when it was only 2·57 per mille. In the Punjab the deaths were only 1·83 per mille.

Delirium tremens.

During 1868, 140 cases had been treated, or 4·4 per 1,000, slightly higher than the ratio of 1867, when it was 4·2. The death-rate, ·38, is midway between ·37 and ·40, the ratios of 1866 and 1867.

Fatality of different diseases.

First in the list comes cholera, which proved fatal to 65·52 per cent. of all those attacked in 1868; next heat apoplexy, 35·68 per cent.; 3rd, phthsis pulmonalis, 15·36 per cent.; 4th, delirium tremens, 8·57 per cent.; 5th, hepatitis, 6·70 per cent.; 6th, dysentery, 4·35 per cent.

Venereal diseases in 1868.

In the Sanitary Report for 1867 (page 54 of the Abstract), statistics are given of venereal disease among European soldiers between 1852 and 1867. From these it appears that the admissions from this cause between 1852 and 1858 varied from 133 to 261 per 1,000. The higher ratio occurred in 1858, and from that year up to 1864 it never fell below 250. In 1861 it was as high as 369. The occurrence of only 166 cases per 1,000 in 1867, therefore, presented a remarkable improvement, and it was hoped that with the development of Lock Hospitals and increased care in carrying out the rules for the prevention of venereal disease, a further diminution would be effected during the year under review. This expectation, however, has not been realized. In 1868 the admission rate from venereal has been 199, or 33 per 1,000 in excess of the admissions from the same cause recorded in the year previous. In 1867, out of 33,784 soldiers, 5,764 were admitted from venereal, either in its primary or secondary form, whereas in 1868, out of a strength of only 31,500, the admissions were no less than 6,282.

In the following stations there has been a diminution of venereal disease :—

Station.	Admissions from Venereal disease per 1,000 of average strength.	
	1867.	1868.
Fort William	335	250
Benares	410	306
Shajehanpore	288	251
Seetapore	167	94
Muttra	186	96
Agra	317	153
Umballa	111	92
Umritsur	195	169
Sealkote	152	112
Saugor	190	166
Roorkee	127	93

In the under-mentioned stations, on the other hand, there has been an increase and in some of them the increase has been great :—

Station.	Admissions from Venereal Disease per 1,000 of average Strength.	
	1867.	1868.
Barrackpore	165	315
Dinapore	263	319
Fyzabad	164	176
Lucknow	181	247
Allahabad	223	396
Cawnpore	193	260
Bareilly	175	262
Moradabad	200	207
Meerut	74	131
Delhi	165	166
Morar	157	184
Meean Meer	130	150
Mooltan	124	192
Peshawur	72	201
Jubbulpore	165	189
Jhansi	153	179
Attock	93	234

Lock hospitals.

By Government Order in the Home Department, 11th November 1868, medical officers on charge of lock hospitals were required to make an annual statement on a prescribed form, and a report on the working of the rules for prevention of venereal disease. These views have been generally received, and a review of the whole submitted to Government. In many stations the registration had been very incomplete, and the numbers actually registered represent but a small part of the evil to be met. In Cantonments, where the statistics of the year show abundant source of infection, the daily number in the lock hospital was less than one. The irregularity in the attendance of the women for periodical examination is complained of as one cause of these unsatisfactory results, but the remedy which the rules provide for this had not been put in force as it ought to have been.

During 1868 the area over which the rules are in force has been much extended, general recommendations have been submitted to Government regarding the area that should ordinarily be embraced, the classes of women to whom registration should be extended, the necessity for enforcing the penalties for non-attendance, and for other breaches of the rules, and the experimental remission of the monthly fee.

Relation of age to mortality.

The ordinary relation of age to mortality had been much disturbed during 1868 by the large number of fatal cases of typhoid fever amongst recruits; also the mortality from cholera, comparatively small as it has been, fell with more than ordinary severity on the young men.

DISTRIBUTION of the STRENGTH of the ARMY according to Age on the 1st January 1868.

TOTAL STRENGTH.	Under 20.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 and upwards.
				10,122		
33,609	1,642	9,033	12,812	7,127	2,470	525

DEATHS of 1868, and the DEATH RATE per 1,000 of the STRENGTH at the different Ages.

CAUSES OF DEATH.	DEATHS OF 1868.				DIED PER 1,000 OF THE STRENGTH ABOVE STATED.				COMPARISON IN PER-CENTAGES.				
	Under 20.	20 to 24.	25 to 29.	30 and upwards.	Under 20.	20 to 24.	25 to 29.	30 and upwards.	Under 20.	20 to 24.	25 to 29.	30 and upwards.	TOTAL.
Cholera	7	11	18	21	4·26	1·22	1·41	2·07	47·54	13·62	15·74	23·10	100
Fevers	10	41	25	15	6·09	4·45	1·95	1·48	43·31	32·29	13·87	10·53	100
Heat apoplexy	3	13	33	43	1·83	1·44	2·58	4·25	18·12	14·26	25·54	42·08	100
Delirium tremens	—	—	4	8	—	—	·31	·79	—	—	28·18	71·82	100
Dysentery and diarrhœa	3	13	21	17	1·83	1·44	1·64	1·68	27·77	21·85	24·88	25·50	100
Hepatitis	—	20	38	50	—	2·21	2·96	4·94	—	21·86	29·28	48·86	100
Phthisis pulmonalis	1	11	18	19	·61	1·22	1·41	1·88	11·91	23·83	27·54	36·72	100
Heart diseases	1	1	12	28	·61	·11	·94	2·77	13·77	2·48	21·22	62·53	100
All other causes	2	23	39	66	1·22	2·54	3·04	6·52	9·16	19·07	22·82	48·95	100
All causes	27	133	208	267	16·45	14·72	16·24	26·38	22·29	19·95	22·01	35·75	100
All causes, excluding cholera	20	122	190	246	12·18	13·51	14·83	24·30	18·79	20·84	22·88	37·49	100

Returns of married and unmarried soldiers.

In a tabular statement showing the strength of married and unmarried non-commissioned officers and soldiers in the three Presidencies on 1st May 1868 it appears that out of 780 staff sergeants the proportion married was 67·94 per cent., of 2,735 sergeants, 1,204 or 44·02 per cent. were married; of 51,578 rank and file only 4,210 were married, or 8·11 per cent.

INDIA.

DEATH-RATES of 1867 and 1868 contrasted.

CAUSES OF DEATH.	MARRIED.		UNMARRIED.	
	1868.	1867.	1868.	1867.
Cholera	2·68	17·26	1·35	11·99
Fevers	·88	1·99	3·26	2·50
Heat apoplexy	6·27	2·99	2·31	1·52
Drunkenness	·30	·33	·20	·26
Delirium tremens	2·39	1·33	·10	·32
Dysentery	2·39	1·99	1·88	2·66
Hepatitis	2·99	1·00	2·87	2·46
Heart diseases	1·79	1·00	·96	·96
Phthisis pulmonalis	2·09	2·66	1·35	1·17
Lung diseases	·60	1·00	·79	·94
Accident	·30	·66	·56	·68
Suicide	·30	·66	·46	·32
All other causes	3·28	3·65	2·63	2·34
Died per 1,000 of strength	26·26	36·52	18·72	28·09
Exclusive of cholera	23·58	19·26	17·37	16·10

In 1867, 29·09 per cent. of all deaths of married men occurred in men below 30, and 70·91 per cent. in men above 30.

In 1868, of the total deaths of married men, 21·59 per cent. were in men below 30, and 78·41 per cent. in men above 30.

In 1867, 35·02 per cent. of all deaths of unmarried men occurred in men above 30, and 64·98 per cent. in men below 30.

In 1868, of the total deaths of unmarried men, 62·50 per cent. were in men below 30, and 37·50 per cent. in men above 30.

DEATH-RATE at the same Ages in the two classes contrasted.

AGES.	MARRIED.			UNMARRIED.		
	Strength.	Deaths.	Ratio per 1,000.	Strength.	Deaths.	Ratio per 1,000.
Under 20	—	—		1,762	27	
20 to 24	148	1	16·74	9,176	140	16·30
25 to 29	987	18		10,843	188	
30 to 34	1,418	40	28·21	6,241	147	23·55
35 to 39	662	20	36·34	1,949	56	28·52
40 and upwards	136	9		365	10	

ADMISSION RATES of the two classes in 1867–68 contrasted.

CAUSES OF ADMISSIONS.	MARRIED.		UNMARRIED.	
	1868.	1867.	1868.	1867.
Cholera	·45	2·12	·19	1·79
Fevers	24·56	26·69	45·59	44·29
Heat apoplexy	1·19	·63	·73	·40
Drunkenness	3·17	2·75	2·10	1·85
Delirium tremens	·89	·63	·35	·34
Dysentery and Diarrhœa	6·03	9·66	11·35	12·80
Hepatitis	4·33	3·22	4·83	5·52
Venereal diseases	·45	·40	19·99	16·94
Heart diseases	·48	1·06	1·06	1·14
Phthisis pulmonalis	·51	·93	·73	·66
Diseases of lungs	2·30	3·55	4·60	4·23
Ophthalmia	4·71	6·04	2·07	2·38
Accidents	5·43	5·64	9·97	9·56
All other causes	23·48	24·36	35·41	36·23
Admitted per cent. of strength	77·98	87·68	138·97	138·13

The daily sick rate of the unmarried was more than double that of the married men, due, no doubt, in a great measure to venereal disease.

Temperate and intemperate.

The annual returns give the following average of each class :—

—	Number reported on.	Abstainers.	Temperate.	Intemperate.	Total.
Cavalry - - -	2795·22	37·79	2708·06	49·37	2795·22
Artillery - -	5620·98	41·90	4984·59	594·49	5620·98
Infantry - - -	24877·03	515·21	22892·48	1469·34	24877·03
Total -	33293·23	594·90	30585·13	2113·20	33293·23

Compared according to the amount of sickness and mortality in each, the results are as follow :—

Class.	Strength.	Average daily Sick.	Ratio per cent. of Sick to Strength.	Number of Deaths.	Ratio per cent. of Deaths to Strength.	Number invalided to England.	Ratio invalided per cent. of Strength.
Abstainers -	594·90	20·63	3·47	8	1·36	24	4·08
Temperate -	30585·13	1357·21	4·44	552	1·80	1,318	4·31
Intemperate -	2113·20	122·92	5·82	56	2·65	186	8·80

Comparative sickness and mortality among different arms of the service.

The results are much more unfavourable among the artillery than among either cavalry or infantry.

Years.	Admissions per 1,000.		
	Artillery	Cavalry.	Infantry.
1863 - - - -	2,365	1,749	1,631
1864 - - - - -	1,945	1,524	1,446
1865 - - - -	1,869	1,318	1,498
1866 - - - - -	1,698	1,177	1,423
1867 - - - -	1,630	1,081	1,442
1868 - - - - -	1,577	1,155	1,301

Years.	Death-rate per 1,000.		
	Artillery.	Cavalry.	Infantry.
1863 - - - -	34·53	16·33	27·09
1864 - - - - -	23·83	19·91	22·46
1865 - - - -	31·23	22·55	25·89
1866 - - - - -	23·86	15·96	19·77
1867 - - - -	27·80	11·80	30·7
1868 - - - - -	24·10	16·40	17·60

INDIA.

Excepting in 1867, when the death rate among the infantry was highest, that branch of the service having suffered most severely from cholera, the annual loss of life has been greatest among the artillery. No great disparity is however found under the head of any particular disease, the higher ratio of sickness and mortality among the artillery is divided over many of them. As regards age there is no disparity among the men of the artillery which would satisfactorily account for the difference in results, nor again in the influence of married and unmarried is there any marked difference. The stations occupied by cavalry are so few, and, as a rule, so healthy, that neither sickness or mortality among them can be considered in relation to what occurs amongst the infantry and artillery. The two latter occupy very much the same stations and in very much the same relative proportion, and the climatic influences to which both are exposed differ but little.

The chief causes adduced are—

1st. The comparatively heavy duties performed by the artillery both during day and night.

2d. The larger number of recruits among them, and men of inferior physique.

3d. The exposure at stable duty.

4th. The want of suitable clothing.

The last two causes may, undoubtedly, have exercised considerable influence, but serge clothing has already been sanctioned, and stabling is being provided. The comparative physique is a question on which no decided opinion can be given, and the relative proportion of recruits shows no especial preponderance of any one class among the artillery.

The testimony, however, of all officers whose opinions have been recorded, is to the effect that the duties of an artilleryman are much more arduous than those of any other soldier. Night work in particular, and especially frequent nights on guard, are a most fruitful source of tropical disease, and heavy duties may force a man into hospital who would not otherwise seek admission. That this is at least in a great measure the explanation of the high sick-rate would appear to be confirmed by the fact, that the excess ratio of admissions among the artillery compared with the other arms is very much greater than the excess ratio of deaths. From all the evidence which is available, the Sanitary Commissioner is inclined to believe that the more unfavourable returns from the artillery are chiefly due to the greater exposure, especially at night, to which they are subject; that this is a cause of the greater sickness, and that the results are apparently exaggerated by the fact that the men, being harder worked than those of either cavalry or infantry, are obliged to resort to hospital when such a course would not be necessary in the case of other soldiers whose duties are lighter.

Invaliding.

Fourteen hundred and five men were invalided during 1868, of whom 421 were recommended for discharge, and 984 for change of climate. The total ratio of loss from these two causes equalled 45·49 per 1,000. In 1867 the ratio was 47·28, in 1866 it was 49·04. From death and invaliding together the loss during 1868 was 66·37, a result which bears favourable comparison with 78·23 of 1867, and generally with previous years.

EUROPEAN TROOPS, 1868.

TABLE showing in detail the CAUSES of DEATH and INVALIDING.

TOTAL LOSS OF THE ARMY OF THE BENGAL PRESIDENCY BY DEATHS AND INVALIDING, 2,040.
PER 1,000 OF AVERAGE STRENGTH, 66·38.

LOSS OF THE ARMY BY DEATH, 635.				LOSS OF THE ARMY BY INVALIDING, 1,405.			
CAUSES OF DEATH.	Died in Hospital.	Died out of Hospital.	Died per 1,000 of Strength.	CAUSES OF INVALIDING.	Invalided for Discharge from the Service.	Invalided for Change of Climate.	Invalided per 1,000 of Strength
Cholera	57	—	1·81	Febris, Intermittens	1	76	2·69
Variola	—	—		„ Remittens et Continua	—	6	
Tonsillitis	1	—		Ophthalmia	—	8	·26
Influenza	1	—		Dysenteria	1	39	1·72
Febris, Intermittens	7	—		Diarrhœa	2	11	
„ Remittens	31	—	2·88	Rheumatismus	21	77	3·17
„ Continua	53	—		Syphilis Secondaria	20	69	2·98
Dysenteria, Acuta	31	—	1·52	Strictura Urethræ	1	2	
„ Chronica	17	—		Tænia, Echinococcus	—	1	
Diarrhœa	6	—	·19	Anæmia	2	42	
Rheumatismus	3	—		Anasarca	—	1	
Syphilis Secundaria	4	—		Scrofula	5	7	
Hydrophobia	1	—		Phthisis Pulmonalis	48	56	3·56
Ebriositas	4	—		Hæmoptysis	—	6	
Anæmia	2	—		Morbus Coxæ	—	1	
Cancer, Epithelial	2	—		Insolatio	2	7	·29
„ Internal	6	—		Epilepsia	9	5	·45
Phthsis, Pulmonalis	49	—	1·55	Chorea	—	1	
Scrofula	2	—		Meningitis	—	1	
Abcessus Psoanus	1	—		Mania	7	1	
Morbus Coxæ	1	—		Dementia	12	6	·90
Meningitis	1	—		Melancholia	—	2	
Encephalitis	2	—		Paralysis	9	7	
Tetanus	2	—		Cœcitas	6	3	
Delirium Tremens	12	—	·38	Dysecœa	1	2	
Apoplexia et Insolatio	88	2	2·78	Cephalœa	1	18	
Paralysis	5	—		Pericarditis	—	1	
Dementia	1	—		Morbus Cordis	54	56	3·85
Syncope	1	—		Aneurisma	5	1	
Pericarditis	3	—		Palpitatio	—	2	
Morbus Cordis	22	1	1·36	Syncope	—	1	
Aneurisma (Aortic)	18	—		Varix	16	7	
Laryngitis	1	—			—	1	
Bronchitis	6	—	·79	Bronchitis	10	27	1·49
Pneumonia	16	—		Pleuritis	—	3	
Gastritis	2	—		Asthma	—	5	
Enteritis	2	—		Pharyngitis	—	1	
Peritonitis	1	—		Peritonitis	—	1	
Hepatitis, Acuta	52	—	3·42	Dyspepsia	2	5	
„ Chronica	56	—		Hernia	17	4	
Cirrhosis	1	—		Hæmorrhois	—	4	
Icterus	3	—		Fistula in Ano	—	1	
Ascites	1	—		Splenitis	1	8	
Nephria	5	—		Hepatitis	18	174	6·22
Extravasation of Urine	1	—		Icterus	—	1	
Synovitis	1	—		Cirrhosis	1	—	
Abscess (after Typhoid Fever)	1	—		Ascites	1	—	
Atrophy and Debility	1	—	·10	Nephritis	3	6	
Accident	5	7		Cystitis	—	2	
Suicide	—	11		Varicocele	3	1	
Drowning	—	15		Orchitis	1	3	
Asphyxia	—	1	1·62	Arthritis	1	3	
Suffocated while drunk	—	5		Synovitis	2	2	
Murder	—	2		Periostitis	2	2	
Execution	—	2		Exostosis	—	1	
				Caries	1	1	·87
				Necrosis	—	3	
				Contractura	4	2	
				Anchylosis of Wrist-joint	2	—	
				Curvature of Spine	1	—	
				Abscess	—	3	
				Ulcer	6	13	
				Tumour	—	1	
				Debility (worn out)	109	160	10·13
				Subluxation	1	1	
				Dislocation	—	1	
				Fracture	7	9	
				Contusion	—	3	·91
				Incised Wound	—	1	
				Gunshot „	4	—	
				Amputation	1	—	
				Causes not specified	—	8	
Ratio per 1,000 for Deaths from causes not specially calculated above	—	—	1·71	Ratio per 1,000 for Invaliding from causes not specially calculated above	—	—	60·0
	589	46	20·11		421*	984*	45·49*

* This total does not include 55 men of the 101st Regiment who went to England with the Regiment, who would otherwise have appeared as Invalids of the season; with the addition of these Invalids, and the strength of the 101st, the Invaliding Ratio becomes 46·26 per 1,000.

INDIA.

Comparison of stations.

Judged by the relative admissions into hospital, it will be found that cases of illness varied from 2,940 per 1,000 in Lahore Fort (among a small body of men) to 729 at Nowgong. In this comparison hill stations and places occupied during only a portion of the year are omitted. The daily average per centage of sick varied from a maximum of 15·3 during nine months at Berhampore to 3·12 at Roorkee. The highest death rate, 38·55 per 1,000, occurred at Berhampore, and the lowest, 6·17 per 1,000, at Attock. The comparison of stations by any or all of these standards for a single year can, however, lead to no definite conclusions; so many facts came into play at different times. In the report for 1869, Dr. Cuningham proposes to consider these results in relation to the decade which will then be completed.

Comparison of regiments.

During 1868 there have, as usual, been great variations in the sickness, mortality, and invaliding of different corps. The highest ratio of admissions into hospital occurred in the 2–25th during 11 months at Berhampore, 2,283 per 1,000; in the Garrison Battery at Delhi, 2,204; in the F Brigade, E Battery, at Umballa, 2,272; in the F Brigade, F Battery, at Meean Meer, 2,900; in the XIX. Brigade, E Battery, at Rawulpindee, 2,288; in the A Brigade, E Battery, at Peshawur, 2,155; in the XXII. Brigade, 4th Battery, 2,736; in the XXV. Brigade, 1st Battery, at Darjeeling, 2,274; in the XXII. Brigade, B Battery, at Ferozepore, 3,266 per 1,000. The high ratio of sickness in six of these eight batteries was evidently due to the unhealthy influences of Peshawur, Saugor, and Jhansi, which had been occupied in the year previous. The greatest proportion of mortality occurred in the VIII. Brigade, G Battery, at Cawnpore, during nine months, in which time it amounted to 70·92 per 1,000. This battery arrived from England in April, and during the nine months following it lost 10 men out of an average strength of 141. Among a small body of artillery at Govindghur, and in one or two of the other batteries, no casualties occurred during the year.

Convalescent depôts.

At Dhurmsala, Darjeeling, and Nynee Tal, the admission rates, 1,128, 1,352, and 2,000; and also the death rates, 27·52, 28·57, and 38·58, were high; especially the mortality at Nynee Tal.

Sickness and mortality of women and children.

The subjoined table gives details of the sickness and mortality of women and children of European regiments during 1868. In 1866 the death rate of women was 25·46, the lowest ever reached; in 1867 it was 46·21. In no previous year on record had it been less than 42. The admission rate of 1,217 per 1,000 was lower than 1,359 per 1,000 in 1867. Under orders of the Commander-in-Chief, only serious cases were admitted into hospital. In the return for Fort William only one woman died out of 102.

The admissions and death rate of children during the two previous years were:—

		Admissions.	Death.
In 1866	(average strength, 4,367) -	804	75·11 per 1,000.
In 1867	(„ 4,888) -	969	104·9 „

In 1867 cholera numbered 94 victims among children; in 1868 only 13. There was great mortality from other causes at some of the stations, especially at Dum Dum; where, out of 70 children, 16 died in one year, or at the rate of 228 per mille.

Detail of the Admissions and Deaths of Women and Children of the European Regiments.

WOMEN.

Average Strength, 3,196.

Admitted during the year - 3,890. Per cent of Strength - 121·71
Died - - - - - - - 101. Per 1,000 of Strength - 31·60

Causes of Admissions and Deaths.	Admitted.	Died.	Admitted per cent. of Strength.	Died per 1,000 of Strength.
Variola	2	—	·06	—
Morbilli	6	—	—	—
Tonsillitis	28	—	—	—
Influenza	1	—	—	—
Parotitis	1	—	—	—
Pertussis	1	—	—	—
Febris, Intermittens	692	2	21·65	·62
„ Remittens	112	10	11·23	4·69
„ Continua	247	5		
Ophthalmia	274	—	8·58	—
Erysipelas	4	—	—	—
Dysenteria	150	14	4·70	6·26
Diarrhœa	261	6	8·17	
Cholera	11	9	·34	2·82
Rheumatismus	50	—	1·56	—
Syphilis Primaria	1	—	—	—
„ Secundaria	8	—	—	—
Ebriositas	4	1	—	—
Scorbutas	2	—	—	—
Aphtha	—	—	—	—
Scabies	1	—	—	—
Vermes	5	—	—	—
„ Tænia	8	—	—	—
Anæmia	141	1	—	—
Anasarca	4	—	—	—
Scirrhoma	2	2	—	—
Scrofula	2	—	—	—
Phthisis Pulmonalis	34	14	1·09	4·38
Hæmoptysis	1	—	—	—
Tuberculosis Mesenterica	1	—	—	—
Meningitis	1	1	—	—
Insolatio	8	6	·25	1·88
Paralysis	1	—	—	—
Epilepsia	4	—	—	—
Mania	6	—	—	—
„ Puerperal	1	—	—	—
Monomania	1	—	—	—
Dementia	3	—	—	—
Delirium Tremens	1	—	—	—
Hysteria	28	—	—	—
Cephalœa	30	—	—	—
Neuralgia	13	—	—	—
Sciatica	1	—	—	—
Otitis	5	—	—	—
Odontalgia	1	—	—	—
Morbus Cordis	7	2	·22	·62
Bronchitis	59	—	3·07	·31
Pleuritis	5	—		
Pneumonia	4	1		
Asthma	1	—		
Ozœna	1	—	—	—
Stomatitis	1	—	—	—
Gastritis	3	—	—	—
Enteritis	2	2	—	—
Obstipatio	9	—	7·01	—
Dyspepsia	164	—		
Colica	37	—		
Hæmatemesis	1	—		
Hæmorrhoids	13	—		
Ileus	1	1	—	—
Splenitis	2	—	·06	—
Hepatitis	78	9	2·44	2·82
Icterus	4	—	—	—
Ascites	1	—	—	—
Nephritis	2	1	—	—
Cystitis	2	1	—	—
Leucorrhœa	7	—	3·41	—
Menorrhagia	25	—		
Dysmenorrhœa	4	—		
Amenorrhœa	5	—		
Paramenia	19	—		
Metritis	9	1		
Phlegmasia Dolens	1	—		
Ovarian Dropsy	2	—		
Prolapsus Uteri	7	—		
Cancer (Uterine)	1	—		
Childbirth	815	9	25·50	3·13
Abortion	66	—	2·06	
Arthritis	1	—	—	—
Synovitis	3	—	—	—
Skin Diseases	6	—	—	—
Phlegmon and Abscess	66	1	2·85	—
Ulcer	25	—		
Debility	211	—	11·01	·31
Injuries	60	1	1·88	—
Causes not specified	2	—	—	—
Homicide	—	1	—	—
Ratios for all causes not specially calculated	—	—	4·57	3·76
Total	3,890	101	121·71	31·60

CHILDREN.

Average Strength, 5,052.

Admitted during the year - 4,244. Per cent. of Strength - 84·0
Died - - - - - - - 438. Per 1,000 of Strength - 86·7

Causes of Admissions and Deaths.	Admitted.	Died.	Admitted per cent. of Strength.	Died per 1,000 of Strength.
Variola	5	2	·10	·40
Varicella	2	—	—	—
Morbilli	254	9	5·03	1·78
Scarlatina	3	—	—	—
Diphtheria	1	1	—	—
Tonsillitis	28	—	—	—
Influenza	11	—	—	—
Parotitis	7	2	—	—
Cynanche Trachealis	7	4	—	—
Pertussis	120	8	2·38	1·59
Febris Intermittens	656	16	12·98	11·28
„ Remittens et Continua	344	41	6·81	
Ophthalmia	809	—	16·01	—
Erysipelas	1	—	—	—
Dysenteria	134	14	4·98	20·39
Diarrhœa	623	89		
Cholera	14	13	·28	2·57
Rheumatismus	7	—	—	—
Syphilis Secundaria	3	1	—	—
Scorbutus	2	—	—	—
Aphtha	4	—	—	—
Scabies	2	—	—	—
Vermes	7	—	—	—
„ Tænia	25	—	—	—
Anæmia	136	12	—	—
Scrofula	22	4	1·23	3·96
Phthisis Pulmonalis	5	2		
Tabes Mesenterica	28	14		
Abscessus Psoanus	2	—		
Morbus Coxæ	5	—		
Encephalitis	2	5	·57	4·75
Meningitis	9	5		
Hydrocephalus	18	14		
Insolatio	5	1	·10	·20
Paralysis	1	—	—	—
Tetanus	2	2	—	—
Epilepsia	2	—	—	—
Convulsio	85	73	1·68	14·45
Chorea	1	—	—	—
Dementia	1	—	—	—
Cephalœa	1	—	—	—
Otitis	7	—	—	—
Odontalgia	1	—	—	—
Morbus Cordis	2	1	—	—
Laryngitis	8	6	4·51*	5·34‡
Bronchitis	165	12		
Pneumonia	9	4		
Gastritis	3	—	—	—
Enteritis	6	2	—	—
Obstipatio	8	—	—	—
Hernia	1	—	—	—
Dyspepsia	19	—	—	—
Colica	2	—	—	—
Hæmatemesis	1	1	—	—
Hæmorrhois	2	—	—	—
Splenitis	7	1	·14	—
Hepatitis	3	1	·06	—
Icterus	4	—	—	—
Hæmaturia	1	—	—	—
Ischuria	2	—	—	—
Diuresis	1	—	—	—
Orchitis	1	—	—	—
Hydrocele	2	—	—	—
Leucorrhœa	1	—	—	—
Dysmenorrhœa	1	—	—	—
Arthritis	2	—	—	—
Synovitis	1	—	—	—
Caries	2	1	—	—
Skin Diseases	38	—	—	—
Phlegmon and Abscess	61	—	1·64	—
Ulcer	22	—		
Dentition	185	38	3·66	7·52
Curvature of Spine	1	—	—	—
Cyanosis	1	1	—	—
Atrophy and Debility	217	35	6·99†	9·30
Injuries	69	2	1·37	—
Cause not specified	—	1	—	—
Ratios for all causes not specially calculated	—	—	3·49	3·17
Total	4,244	438	84·01	86·70

* Including Tonsillitis and Influenza. † Including Anæmia. ‡ Including Croup.

Vital statistics of officers.

The difficulty of obtaining reliable data was great, the number of officers entered as sick in Regimental Returns being no index of actual amount of sickness as a body, because cases of serious and obstinate illness are often transferred for change of climate to England or the Hills; and also, regarding the sickness of officers on staff employ, no records whatever are kept. The actual mortality might be learned from the Adjutant General's office, and the Sanitary Commissioner proposes to collect all procurable data and add them to the statistics of 10 years in the subsequent Report for 1869.

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Registration of deaths in military cantonments.

In G. O. C. C., No. 199, dated the 30th August 1867, registration of deaths was prescribed in all cantonments. In accordance with a subsequent order (No. 387, dated 20th December 1868), monthly returns, in a form recommended by the Sanitary Commissioner, were called for, to be regularly forwarded to this office. Returns from most cantonments had been received regularly during the current year 1869, and in some cases particulars were furnished regarding the mortality of 1868. For the sake of greater convenience, and in order that the information might be available to His Excellency the Commander-in-Chief, it had recently been ruled (G. O. G. G., Military Department, No. 711, dated 2nd July 1869), that these returns should in future be submitted through the Adjutant General, and then forwarded by him to the Sanitary Commissioner.

It has also been decided to render registration of deaths within the limits of military cantonments compulsory, under the provisions of Act XXII. of 1864, and the following clause has accordingly been added to the Cantonment Regulations (G. O. G. G., No. 645, dated 15th June 1869):—"The head of any house or "family in which a death may occur, shall within 24 hours report or cause to be "reported to the cantonment magistrate or, in his absence, to the officer command-"ing the station, the fact of such death, as also the cause to which death is "believed to have been due."

Vaccination in military cantonments.

In the last annual report it was stated that the question of compelling all non-military persons, residing within the limits of cantonments, to submit to vaccination as a condition of residence, was under consideration. On this point the Government has decided that compulsion shall not be enforced. It is considered that no necessity has been shown for making arrangements for vaccination in cantonments different in their nature from those which prevail outside the cantonment limits; that everything should be done to encourage vaccination both in cantonments and their neighbourhood, and that any proposals having this object in view should be favourably received.

Details of barrack accommodation.

During 1868 the only matter of importance resolved on was a standard plan of cook-room for European troops. Instructions were also issued to avoid defilement of ground by bodies of workmen, latrines being provided for their use, and a system of conservancy enforced; also, to ensure the cleanliness of the vicinity, the ground round all new barracks will be ploughed and cropped previous to their occupation, except in any cases in which the delay thereby occasioned would prove inconvenient.

Considerable progress has been made in the construction of the new barracks and of the auxiliary accommodation to be provided with them. Barracks for the artillery at Barrackpore were in progress. At Cawnpore, Moradabad, Chuckrata, Raneekhet, Delhi, Mooltan, Jullundur, Lucknow, Seetapore, Fyzabad, Jubbulpore, Saugor, Morar, Gwalior, and Nowgong work had been well commenced. At Allahabad the new barracks were occupied in the spring, but owing to the regiment having entered them before it had shaken off an attack of cholera, on account of which it had moved into camp from its old quarters, the new buildings have not had a fair trial.

Strength of troops in the hills.

During the hot season of the current year arrangements have been made for locating a larger body of men in the hills than have ever been quartered there before. A statement, prepared by the Quartermaster General in February 1869, showed that either in cantonments, at depôts, or in working parties, the probable number of British troops of all arms stationed in the hills would amount to nearly 6,000 men. Of these 2,101 would be in cantonments; 1,676 at sanitaria; and 2,120 in working parties. At Raneekhet and Chuckrata the men are employed in clearing the ground and in building operations required for these new hill stations.

Employment of soldiers on public works.

The duration of the year's operations on the Abbottabad and Murree Road in 1868 was curtailed to half its ordinary length, from the soldiers being called to active service on the Huzara Frontier. The returns of the men employed were considered satisfactory.

The number of admissions from fever steadily decreased; there was no venereal and no disease arising from intemperance. The return shows that of an average of 144 men, the average daily sick numbered 5·04. During the four months, May, June, July, and half of August, there were 96 admissions into hospital; one death only occurred, and that was from phthisis. In the 1–19th, during the same period, out of an average of 500 men, the daily average sick varied from 7·71 to 9·93. There were 110 admissions into hospital; of these a considerable number were venereal cases, who had contracted the disease before leaving Rawulpindee. There

were only two deaths in this party, one from accident and the other from heart disease; the second occurred after over exertion in wrestling. The opinion of the officer in command of these detachments entirely confirms that of his predecessors. He believes that "the moral, physical, and pecuniary advantages to the men cannot be over-estimated." Their behaviour was excellent, and they manifested great interest in the works.

Military gymnasia.

Large and well-appointed gymnasia were in course of construction at all principal stations occupied by British troops. These buildings are divided into two classes, experimental and barrack gymnasia; the former being all detached buildings, specially constructed, and thoroughly fitted and roomy. Statistics were to be prepared showing the comparative health of regiments having gymnasia and those without them.

Soldiers garden and workshops.

The results of the gardens had not been forwarded. The statement of workshops was satisfactory, 29 regiments being entered in it, and, excepting in the case of two, there was in each case a balance at credit at the close of the year; in the 103d Regiment, amounting to nearly 10,000 Rs., and in the 3d Battalion Rifle Brigade the balance was over 7,500.

Analysis of water.

Two further reports had been issued by Dr. Macnamara. In the first, dated 2d June 1868, the results of operations at 21 stations are tabulated and commented on, with special reports on the water supply of Umballa, Agra, Morar, and Jhansi. The second report (being the fourth issued by Dr. Macnamara,) refers to the analysis conducted at 26 stations, with further special accounts of water supplies appended. Nusseerabad, Ajmere, Jubbulpore, &c. &c.

Results of the analyses.

The general results of the analyses show that the water supply in most stations cannot be said to be either good or sufficient, and that in many places defects in conservancy arrangements and in the construction of the wells lead to the presence of impurities. In a few stations, such particularly as Umballa and Nusseerabad, the supply is very defective, and measures for securing an increased quantity are much required. The whole question of what specific measures ought to be adopted by the Government as the result of the analyses of the last three years, is now under consideration, and a scheme will shortly be submitted, showing what appears in each case to be required, what wells should be closed as hopelessly impure, what ought to be done to correct those whose improvement is possible, and what means ought to be adopted in those stations in which the present supply is either generally of inferior quality or defective in quantity.

Practical measures already adopted to improve water supply.

Orders have already been issued that the various suggestions and recommendations made by Dr. Macnamara for preventing the pollutions of wells, the water of which is used for drinking, should be carefully attended to. In particular, an order has been issued directing that all such wells, both in cantonments and encamping grounds, shall be provided with covers. The experimental use of pumps at the stations of Hazareebaugh, Dinapore, Lucknow, Cawnpore, Bareilly, Agra, Jubbulpore, Meerut, Rawulpindee, and Sealkote has also been sanctioned. A standard design of bathing platform has also been recommended, which may be adopted with advantage whenever wells are used for bathing purposes, and are apt to be fouled in consequence. It has also been suggested, that where river water is available arrangements should be made for its experimental use.

Method of storing cool water in wells.

At the suggestion of Mr. Lepel Griffin, the Punjab Government recommended that the method of storing cool water in wells which is commonly practised in Persia and some parts of Afghanistan should be tried at Meean Meer. The system is thus described:—"A large well should be selected, which should be carefully "cleaned of dirt in November. At the beginning of December a cut should be "made from the canal or river to the well, and water should be allowed to flow into "the well from 4 a.m. till 6 or 7 a.m. The oftener this filling process is repeated "the better, during the coldest weather in December and January. The well "should then be covered with beams, mats, and earth, and it is as well to build "over it a thatch to prevent the direct rays of the sun from striking on it. The "well may be opened on the 1st May as far as necessary for drawing water, "and its water will retain its ice cold temperature throughout the hot season. As "canal and river water brings with it a certain amount of foreign matters in suspension, it improves the water to allow it to flow at night into an earthen reservoir "adjoining the well, and in the early morning when the earthy matter has settled "down to draw it off into the well. In Persia the wells are often filled with snow "instead of river water, but the result is the same." The proposal was submitted to the Government too late to admit of its being carried into effect during the

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current year, and the distance of the wells from the canal at Meean Meer involved considerable expense. Further information has been asked for to show the comparative temperature of the wells so filled and protected with that of those in ordinary use, and if the results should be satisfactory the scheme is deserving of a trial in some stations where a well can be selected conveniently situated for the purpose.

The question as to the best mode of keeping water sweet in tanks had, in the case of the Vehar waterworks, been referred to the Army Sanitary Commission, who recommend—

1. That the lake itself should be kept as free as possible from decaying organic matter.
2. That all water supplied to Bombay from the lake be drawn through fine wire screens, so as to prevent floating matters and fish from entering any conduit, and that such water in all cases be sand filtered, and passed into a covered pure water tank or reservoir in immediate connexion with the filters previous to distribution through the mains.
3. That the filters and covered pure water reservoir should be at the Bombay end of the conduit pipe, if practicable, the contents of the reservoir to be equal to a day's supply of the population.
4. That similar measures be adopted for preserving the purity of source of supply of all open water tanks in which water is stored for domestic use, and that all open tank water be sand-filtered, and stored in covered expense tanks or cisterns, from which it can be drawn pure for consumption.

These recommendations are of general applicability, and if the precautions are diligently carried out, this question of growth of water plants and fish in reservoirs is of little importance. If care is taken to remove all dead vegetation from the surface and banks, living vegetation is rather an advantage than otherwise, if limited in extent so as not to interfere with supply works, and unless the plants are poisonous. The vegetation is a conversion of dead organized matter into living forms, and is one of nature's processes for purifying water. The flow of impure water over rocky channels is another. The existence of fish also tends to preserve that balance in vital forces throughout the body of water which tends to reduction of dead organized matter. Certain kinds of water plants and fishes are perhaps better adapted for these ends than others, and this question may be well studied in India.

Filter for barracks.

Dr. Macnamara has devised an apparatus which seems to meet all requirements; it has been tried with success in the Medical College Hospital, Calcutta, and also in the barracks at Fort William. It consists of a stout cylindrical zinc vessel 18 inches high by 10 inches in diameter, closed at the upper end except where the delivery pipe is attached. When the filter is placed in a tub or cistern, and supported a few inches from the bottom of it, the water contained in the tub or cistern passes into the filter, percolates through sand and well burnt animal charcoal, and is delivered by means of a pipe which is commanded by a stop-cock. The experimental results have been so satisfactory that a more extended trial at several military stations both in the Presidency and in the other divisions of the army have been ordered, and should they prove equally successful, the general introduction of this form of filter which in every respect is so superior to that now in use, will doubtless take place.

Entozoa in ration cattle.

Throughout the Punjab during 1868, 1,038 head of cattle, or 6·12 per cent. of those tendered for rations, were found infected. A careful investigation into the whole question of the beef cyst, and its connexion with the developement of tapeworm in the human body, had been ordered.

Cots and bedding.

The supply of cots on the trestle principle was nearly completed. Mr. Campbell, superintendent of the Roorkee workshops suggested the adoption of aloe fibre as a durable, clean, and elastic stuffing for the soldiers' bedding. The issue of English blankets for European troops in hospital was sanctioned in lieu of native blankets lined with chintz.

Dry earth sewage.

The results reported are considered to prove the superiority of the system in regimental latrines over any other that has been tried. Orders had not yet been issued directing its adoption in all British regiments, but it is already practically carried out, and has indeed been in use for some years past in the great majority of corps serving in the Presidency. The general introduction was sanctioned of glazed earthenware urinals which were found a great improvement on the iron ones hitherto in use,

The high cost of this powder (at Lahore Rs. 25 a maund) was a considerable bar to its general employment in contagious diseases, and arrangements should be made for supplying it at a lower rate.

Macdougall's disinfectant.

Monthly sanitary reports were submitted to Government from the different circles of medical superintendence by the Inspector-general of hospitals. Any points requiring remedy are immediately brought to the notice of the officer commanding, and copy of correspondence is appended to each monthly report.

Monthly sanitary reports.

An order was issued by Government in the Public Works Department for an accurate measurement of all military buildings, to correct discrepancies in different reports.

Measurement of military buildings.

The stations of Jubbulpore, Degrah, Laudour, Mussoorie, Chuckrata, and Roorkee had been inspected and reported on during the year, and important recommendations made, especially as regards the drainage of Jubbulpore, where the troops have hitherto suffered much from fever and dysentery. In making these and other recommendations, the suggestions of the Army Sanitary Commission for improvement of military stations in India have been kept in view. With regard to the Commissioner's instructions with respect to cholera, recommending that well marked endemic localities be selected in each Presidency, and a thorough inquiry made into its sanitary state, drainage, adjacent country, water, &c. (see Appendix to Sanitary Abstracts for 1869, page 190), it was considered that the only part of the Presidency in which this inquiry could be satisfactorily conducted was Bengal Proper, and the attention of Government was specially directed to the subject, with a view to the desired investigation being made in one or two places in which the endemic character of cholera is most marked, and also in a few of the gaols in which the disease has been most persistent.

Survey of stations.

In accordance with the instructions conveyed by the Right Honourable the Secretary of State, a report is being prepared to show the progress made in sanitary improvement in India since the subject first attracted the special attention of the Government. The special points on which information is desired are the arrangements which have been made for introducing in the medical service the sanitary provisions contained in the regulations issued by Lord Herbert, under date the 7th October 1859; how far it has been found possible to give effect to the recommendations made by commanding officers for removing causes of disease pointed out by medical officers in barracks and cantonments; what organization is proposed to secure the health and cleanliness of towns and villages under each Government; what steps have been taken to give effect in each Presidency and Administration to the recommendations contained in the "Suggestions in regard to sanitary works required for improving Indian stations," and other matters of importance. Replies have not yet been received either from Bengal or Oude; when these have been received, the information called for by the Secretary of State will be supplied with as little delay as possible.

Sanitary progress in India.

The Statistical Officer had been removed from the Indian Medical Department, and attached to the Sanitary Commission, so that the facts, on the basis of which all real reforms must be instituted, are communicated with the least possible delay. The importance of Dr. Bryden's services have been repeatedly brought to the notice of Government, and fully recognized. Another change in the department is the abolition of the office of Secretary. The Sanitary Department with the Government of India now consists of a Sanitary Commissioner and a Statistical Officer, and these changes, it was hoped, would lead to increased efficiency. In the Report for 1869 Dr. Cuningham proposes to submit a series of tables prepared by Dr. Bryden, illustrating the health of European and Native troops and of prisoners for a period of ten years, with the comparative healthiness of stations, health of regiments, and other data for the same time.

Changes in Sanitary Department.

Dr. Goodeve's suggestion regarding cholera maps had not been lost sight of, but it was considered that without a map on a much larger scale than could be conveniently appended to a report, the details could not be shewn in the form he proposes. A map is however given, showing the, fortunately, limited area in which cholera appeared during 1868; and before the close of 1869 it was hoped that some more perfect arrangement might be devised by which the general history of the disease in each year may be more clearly and accurately mapped.

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PART II.

NATIVE TROOPS.

Mortality of the year.

Out of an average strength of 40,770, the deaths numbered 444, or in the proportion of 10·89 per 1,000. Compared with previous statistics and with the death-rate of 1867, the results of 1868 have been remarkably favourable, and present a lower ratio than in any of the past seven years. The minimum annual mortality during that period was 11·98 in 1866. In the other years it varied from 13·06 to 16·79 per 1,000. Such are the results when the deaths of sepoys serving with their regiments alone are considered. The total number of casualties during 1868, including those which occurred with regiments and those which occurred among men on leave, so far as they have been ascertained, amounted to 742, and taking the total strength of the Native Army, including absentees, as 45,844, the mortality has thus amounted to 16·19 per 1,000. This result does not compare so favourably with that of previous years, in which the total loss of the regular Native Army by death has fluctuated from 15 per 1,000 in 1864 to 20·31 per 1,000 in 1861. In making these comparisons, however, it must be remembered that much difficulty is experienced in ascertaining all the deaths which occur among men on leave, and as greater attention is now devoted to this point than used to be, it is not improbable that the higher ratio of casualties reported among those away from their regiments may be accounted for, to some extent at least, by more complete and accurate returns.

Chief causes of mortality.

It is regarding the mortality of the 444 men who died with their regiments that particulars can alone be given; and the diseases arranged in the order in which they have contributed to this death-rate of 10·89 per 1,000 stand thus* :—

		Number of Deaths.	Ratio per 1,000.
Died in Hospital.	Fevers	97	2·38
	Respiratory diseases	55	1·35
	Cholera	45	1·10
	Dysentery	43	1·06
	Diarrhœa	37	0·91
	Atrophy and anæmia	30	0·52
	Phthisis pulmonalis	21	0·74
	Spleen disease	9	0·22
	Heart disease	9	0·22
	Scurvy	8	0·19
	Wounds and accidents	7	0·17
	Hepatitis	7	0·17
	Apoplexy	7	0·17
	Small-pox	5	0·12
	Dropsy	4	0·10
	All other causes	45	1·10
	Died out of hospital	15	0·37
	Total	444	10·89

The first four diseases—fevers in their various forms, respiratory affections, cholera and dysentery—together caused a death-rate of 5·89 or more than one-half of the total mortality of the year. Of these, however, none proved more than ordinarily fatal.

The chief causes of mortality in the Native Army show a general, and in some cases a marked diminution, compared with previous years.

* The statistics of the Abyssinian Field Force, while employed out of India, are not included in the General Tables, but referred to separately.

DEATHS per 1,000.

——	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.
Cholera	4·09	2·51	1·52	1·67	2·83	2·54	3·17	1·10
Fevers	3·97	4·12	4·25	3·84	4·38	2·78	3·04	2·38
Dysentery and diarrhœa	3·16	2·45	2·93	2·29	2·62	2·01	1·77	1·97
Respiratory diseases	1·51	1·64	1·44	1·83	1·15	·91	·97	1·35
TOTAL FROM ALL CAUSES	16·79	13·97	14·63	13·13	14·72	11·98	13·06	10·89

Mortality according to months.

The monthly proportion in which the deaths occurred in 1868 presents a remarkable contrast to the case of European soldiers. The deaths among Europeans, as has been already stated, occurred chiefly during the hot months, the ratio of mortality in them showing a remarkable increase over that of the other months and of the general average for the year. But among Native troops the case is altogether different. With them the greatest mortality occurred in the cold season, chiefly in the months of December and January. This remark applies not only to the statistics of 1868, but also to those of previous years.

Extent of sickness during 1868.

Out of the average strength of 40,770 men, 47,939 cases of sickness were treated, or a ratio of 1,175 per 1,000. The largest monthly proportion of admissions, 127 per mille, occurred in September, the ratio in October being nearly the same. The minimum, 75 per 1,000, was reached in February. The daily average number under treatment fluctuated between a minimum of 1,254 in April (31 per 1,000) and a maximum of 2,039 in November (48 per 1,000). The average constant sick rate for the year was 46 per 1,000. These statistics compare favourably with previous years.

YEAR.	Admissions per 1,000.	Daily average Sick per 1,000.
1861	1,169	40
1862	1,384	44
1863	1,476	46
1864	1,388	43
1865	1,475	44
1866	1,385	45
1867	1,447	46
1868	1,175	37

The chief causes of admissions are given in the following Table, the figures of which present a remarkable contrast to the ratios of admissions under the same heads occurring amongst European Troops.

——	Number of Cases.	Ratio per 1,000.
Fevers	21,508	527·0
Wounds and accidents	5,000	122·0
Abscess and ulcer	4,295	105·0
Dysentery	3,007	73·0
Rheumatism	2,365	58·0
Diarrhœa	1,981	48·0
Venereal diseases	1,763	43·0
Respiratory diseases	1,593	39·0
Eye diseases	883	21·0
Spleen disease	261	6·0
Scurvy	158	3·0
Hepatitis	99	2·0
Cholera	93	2·0
Phthisis pulmonalis	56	1·0
Small-pox	45	1·0
Apoplexy	12	0 3
Dropsy	12	0·3
All other causes	4,808	117·0

The admissions and mortality in the different Provinces under the chief diseases during the years 1866–67–68 are compared in the annexed statements. The results of the year under review as regards sickness, compare favourably with those of the two preceding ones; but the deaths in each province do not show the same uniform improvement.

INDIA.

Admissions per 1,000. (Native Troops.)

Years.	Cholera.	Small-pox.	Fevers.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Rheumatism.	Venereal Diseases.	Eye Diseases.	Abscess and Ulcer.	Wounds and Accidents.	All other Causes.	Total.
Bengal Proper and Assam.																			
1866 -	13	2·0	790	0·3	136	121	2	7	56	1	1·0	14	70	49	12	157	89	132	1,658
1867 -	10	0·5	641	0·1	161	100	2	12	44	1	1·0	5	61	55	14	114	118	154	1,496
1868 -	6	0·1	506	0·5	125	79	3	8	65	1	0·6	13	78	41	19	92	99	155	1,294
Dinapore, Benares, Oudh, and Cawnpore Districts.																			
1866 -	1	1	518	0·7	45	26	1	15	24	0·6	0·6	0·4	68	68	22	127	93	100	1,118
1867 -	4	1	553	0·3	55	42	1	5	27	0·5	1·0	0·3	63	56	25	124	171	112	1,245
1868 -	1	1	434	0·1	58	32	2	7	28	2·0	—	0·9	53	43	19	128	155	123	1,087
Meerut and Rohilcund.																			
1866 -	0·2	2	382	—	32	35	1	4	44	0·7	0·2	0·9	69	62	33	174	97	110	1,051
1867 -	3·0	2	436	—	48	52	2	4	55	1·0	0·6	2·0	71	51	26	108	99	155	1,118
1868 -	0·8	5	337	0·2	33	25	1	8	35	0·8	0·2	2·0	49	40	22	86	97	120	863
Agra and Central India.																			
1866 -	0·7	0·5	1,026	1·0	50	40	1	18	28	0·9	0·1	0·7	72	70	31	173	156	109	1,782
1867 -	2·0	0·9	782	0·6	48	54	1	15	23	0·2	0·4	—	62	57	20	160	142	114	1,487
1868 -	0·3	1·0	696	0·2	36	26	2	5	25	1·0	0·5	1·0	49	68	21	122	136	106	1,297
Punjab.																			
1866 -	—	1·0	689	0·1	57	34	2	5	39	2	0·2	2	49	40	40	133	116	87	1,299
1867 -	0·8	0·5	1,030	0·7	69	53	2	6	33	2	—	1	61	25	34	110	117	89	1,645
1868 -	0·1	0·2	583	0·3	80	55	3	5	38	1	0·2	2	56	33	25	99	117	96	1,196

Deaths per 1,000. (Native Troops.)

Years.	Cholera.	Small-pox.	Fevers.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen.	Respiratory Diseases.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.	Total.
Bengal Proper and Assam.																		
1866 -	7·03	0·51	5·20	0·20	3·87	1·94	0·20	0·10	1·23	0·41	0·82	0·20	0·61	0·92	0·61	1·33	0·20	25·38
1867 -	4·56	—	4·19	—	2·22	0·98	0·37	0·74	0·98	0·62	0·74	0·12	0·74	0·62	0·62	2·59	0·24	20·33
1868 -	2·51	—	3·51	0·38	2·12	1·63	0·50	0·50	2·89	0·38	1·13	0·38	0·88	1·51	0·13	2·26	0·38	21·10
Dinapore, Benares, Oudh, and Cawnpore Districts.																		
1866 -	0·99	0·28	1·69	1·42	0·99	—	—	0·14	0·57	—	0·28	0·28	—	0·28	0·14	0·57	—	6·63
1867 -	2·73	0·27	3·00	0·55	0·55	—	0·14	0·41	0·27	—	0·27	0·41	—	0·14	0·41	0·81	0·41	10·37
1868 -	1·27	0·38	1·40	—	1·02	0·51	0·13	0·13	0·38	—	0·26	—	—	—	0·13	0·76	0·38	6·75

DEATHS per 1,000. NATIVE TROOPS.—*continued.*

YEARS.	Cholera.	Smallpox.	Fevers.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen.	Respiratory Diseases.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.	TOTAL.
MEERUT AND ROHILCUND.																		
1866 -	—	0·70	1·41	—	0·47	—	0·23	—	1·41	—	0·47	—	0·23	0·23	0·23	1·64	0·47	7·49
1867 -	2·53	0·63	2·11	—	0·21	0·42	0·63	—	1·69	0·63	0·63	—	—	0·85	—	0·42	—	10·75
1868 -	0·19	0·19	1·35	0·19	0·77	0·77	0·08	0·58	1·16	0·38	—	0·19	—	0·97	0·38	1·16	0·58	8·86
AGRA AND CENTRAL INDIA.																		
1866 -	—	—	3·57	0·45	0·45	0·22	0·22	—	0·89	0·22	0·22	—	—	—	0·45	0·89	—	7·58
1867 -	0·91	—	2·00	0·37	0·55	0·91	0·18	—	0·18	—	0·18	—	—	0·18	0·18	0·73	0·37	6·93
1868 -	0·16	—	1·64	0·16	0·16	0·82	—	0·16	0·16	—	0·33	—	—	0·65	—	0·33	—	4·57
PUNJAB.																		
1866 -	—	0·54	1·61	0·09	0·27	0·27	0·18	—	0·72	0·09	0·54	0·09	—	0·09	0·45	0·72	0·18	5·84
1867 -	3·89	0·08	3·05	0·24	1·13	0·97	0·08	0·08	1·46	0·16	0·97	—	—	0·32	0·48	0·81	0·08	13·75
1868 -	—	0·07	3·15	0·15	0·84	0·69	0·07	—	1·68	0·31	0·62	—	0·07	0·61	0·23	0·92	0·38	9·68

A comparison of sickness and mortality among the European and Native Troops in the different groups shows the following results :—

ADMISSIONS per 1,000.

—	Bengal Proper.	Dinapore, Benares, Oudh, and Cawnpore Districts.	Meerut and Rohilcund.	Agra and Central India.	Punjab.	Total.
European Troops - -	1,757	1,318	1,241	1,439	1,498	1,438
Native Troops - -	1,294	1,087	863	1,297	1,196	1,175
DEATHS per 1,000.						
European Troops - -	28·66	20·97	18·55	18·22	15·67	20·11
Native Troops - -	21·10	6·75	8·86	4·57	9·68	10·89

It was considered, however, that several circumstances combined to make this comparison imperfect. In the first and fourth groups Native soldiers are distributed in unhealthy localities where there is no British soldier. On the other hand, the facilities with which the sick Sepoy obtains leave of absence for change of air at all times of the year are not enjoyed among Europeans. But a further comparison of sickness and mortality at particular stations shows results markedly in favour of the Native, and indicates how much more serious are the ailments which attack British soldiers.

Invaliding.

During 1868 the permanent and temporary leaves from invaliding in the European and Native armies of Bengal were as follows :—

—	Invalided for Change of Air.	Ratio per 1,000.	Invalided for Discharge from the Service.	Ratio per 1,000.	Total.	Total Ratio per 1,000.
European Soldiers - -	984	31·19	421	13·34	1,405	44·53
Native Soldiers - -	922	20·11	648	14·13	1,570	34·24

INDIA.

Cholera.

Cholera was little prevalent throughout the Native army; there were in all 93 cases, of which 45 were fatal.

The only epidemic deserving notice took place in the month of January among the men of a wing of the 7th Regiment Native Infantry proceeding in boats from Dacca to Cachar. Of the 20 cases, 11 were fatal between the 4th of January, when the first man was seized, and the 19th of the same month. Throughout the Punjab only one case is returned, and as this was not fatal, and its history has not been given, it may be doubted whether it was true cholera. The occurrence of a few scattered cases at Allahabad, Cawnpore, and Lucknow is of interest in connexion with the prevalence of the disease during the current year (1869). The total admissions from cholera during 1868 were in the proportion of 2·3 per 1,000, and the deaths 1·10, results more favourable than in any of the previous seven years.

Small-pox, fevers, &c.

Small-pox was at its minimum in 1868 and does not require any specific mention. The returns regarding fevers are also particularly favourable.

Respiratory diseases.

Respiratory diseases merit some notice. During 1868, 1,593 cases were treated, or 39 per 1,000, the death-rate being 1·35. In some of the stations of Lower Bengal, especially at Fort William the admissions (2·14 per 1·000) were high. The statistics of the Native troops forming part of this garrison during 1868 were particularly unsatisfactory, the sickness and deaths being out of all proportion to the average of the army generally.

Venereal diseases.

Venereal diseases averaged 43 per mille during the year, In 1867 the ratio was 45; in 1866, 54; in 1865, 51; in 1864, 49; in 1863, 49; in 1862, 59; and in 1861, 63 per 1,000. These figures contrast remarkably with the admissions among European troops. The average number of cases among British soldiers for 1868 was 199 per 1,000. In some stations the ratio was as high as 300, and in one or two nearly 400 per 1,000. The highest ratios of admissions in the Native army were 160 at Jhansie, 136 at Hazareebaugh, and 96 at Fort William, and these were altogether exceptional cases. In some stations they were remarkably few, as at Buxa Dooar, where they were only 7 per 1,000, and at Bukloh 3. It is worthy of notice that at some of those places in which the disease was most prevalent among European soldiers the Native soldiers were very free from it. For example, at Dum-Dum the proportion was of Europeans 374, of Natives 40; at Dinapore, 319 compared with 18; at Allahabad, 396 compared with 30. In connexion with the measures to be adopted for checking venereal disease among the European soldiers, these facts are of value, for they show a very small proportion of cases among Sepoys occupying the same stations in which British soldiers have suffered most, and they show also that the lock hospitals have had very little influence on the extent of the disease among Native troops, which, although small, is certainly capable of reduction.

Central India Irregular Force.

This force during 1868 comprised an average strength of 3,177. The statistics are satisfactory; daily sick 31, admissions 989, and deaths 8·81 per 1,000. The mortality from fevers was somewhat higher than in the regular Native army, but there was no cholera, and the deaths from bowel complaints and respiratory diseases were remarkably few.

Punjab Irregular Force.

The returns were also favourable; the daily sick averaged only 29; the admissions 1,077, and the deaths 7·47 per 1,000. In this are not included 19 men killed in action.

Abyssinian expedition.

No satisfactory statistics are available regarding the extent of sickness. Many cases of illness appear to have been treated in field hospitals, and on board hospital ships, and from these no returns had been received. An outbreak of contagious fever occurred among the Punjab Muleteers returning from Abyssinia. An interesting report of which has been furnished by Dr. Gray, Civil Surgeon, at Mooltan, who superintended the necessary arrangements on the muleteers arrival at that station. The disease appeared to be the same as that which proved so fatal in the gaols of Upper India. From the date of leaving Bombay till they left quarantine in Mooltan and Lahore, out of a strength of about 4,500 men, 404 died. The levies left the Punjab in November and December 1867, and returned in the months of August, September, October, and November 1868. They had been raised chiefly in the Rawul Pindee, Lahore, Umritsir, and Mooltan Districts, and were of all the different creeds, nationalities, and casts of those parts of the country. Neither in going to Abyssinia, during stay there, or on return to Bombay, was there any unusual sickness among them. At Bombay the arrangements for their shelter were imperfect, and many of them were much exposed in consequence, but the sickness and mortality were still small. Nothing unusual occurred on the passage from Bombay to Kurrachee; but during their short stay at

this latter place, one or two cases of the peculiar fever which afterwards proved so fatal appear to have occurred and to have escaped notice. On their way up the river in boats the space allotted to them was generally in excess of that allowed by regulation. Some of the levies lost many men during this period, but there was no connexion traceable between the amount of space and the extent of the disease in different detachments; some of those which suffered most severely enjoyed a larger area per head than those which suffered less. As soon as they arrived at Mooltan arrangements were made to provide hospitals and attendance for the sick, and to place all of them in quarantine—measures which were attended with excellent results. It is difficult to explain the origin of the disease. There is no evidence to show that it originated in over-crowding or any other insanitary conditions. The history of the epidemic rather points to the occurrence of some isolated case which was undetected, and from which the others sprung.

A similar fever attacked some of the dooly bearers on service with the Abyssinian force. In the ship "India," which sailed from Calcutta on the 6th December 1867, with 419 Kahars on board, and arrived at Aden on the 4th January 1868, 46 died during a passage of 30 days. Two of the crew also died. On arrival at Annesley Bay five days afterwards 87 of the bearers and three of the Lascars were ill; and of these several were in a hopeless condition. Three of the crew afterwards died. The deaths, so far as could be gathered, were all due to the same variety of fever as proved so fatal to the returning muleteers. In the opinion of some of the authorities, the disease was due to over-crowding and insufficient clothing, but the history of the outbreak did not accord with such an explanation. Cases had occurred within a very few days after sailing, and the occurrence of this peculiar form of fever in the coolie camp at Calcutta, and the danger of its appearing on board ship, had been brought to notice before they embarked.

A similar outbreak occurred among a party of bearers returning from Abyssinia in the ship "Ophir." Out of 422 men who embarked at Zoulla on the 2nd June 1868, 27 died before reaching Calcutta on the 23rd July. The disease was attributed to the circumstances that weakly men had been over-crowded on board, that the regulation space was insufficient, that the decomposition of the mats on which the sand ballast rested increased the noxius effluvium of the bilge water mixing with the sand, and that the foul atmosphere arising from these causes could find exit from the hold only through holes opening into the deck occupied by the kahars. But the "Ophir" had carried 428 kahars from Calcutta to Annesley Bay without any unusual sickness, and owing to there being a greater number of mules and horses on board on that occasion, the space available for the men had then been less. A careful inquiry, moreover, showed that while the vessel was at anchor in Annesley Bay, six of the crew had died, six more died between Zoulla and Bombay, and on reaching that port nine were sent to hospital, of whom two died; 14 deaths thus occurred among 50 of the crew. The evidence regarding the precise nature of the disease was defective, but there seemed reason for believing it was the same which appeared subsequently among the kahars.

PART III.

JAILS.

Number of prisoners during the year.

The jail population of the Bengal Presidency averaged 55,287 prisoners throughout the year. This number is slightly in excess of the strength for 1867, in which it amounted to 54,962. In 1866, owing chiefly to the effects of severe famine in great part of the Lower Provinces, the number was 57,322, the highest average of any year since the mutinies. Compared with the years previous to 1866, the number of prisoners shows a considerable increase. Commencing with 1862, the average strength was 52,871; in 1863, 52,401; in 1864, 52,598; and in 1865, 54,337. A comparison of the different groups in 1867 and 1868 shows an increase in the second, third, and fifth, and a diminution in the population of the other two.

	1867.	1868.
Bengal Proper - - - -	15,692	15,160
Dinapore, Benares, and Cawnpore -	16,940	17,400
Nagpore and Central India - -	4,421	4,440
Rohilcund, Meerut, and Agra - -	7,403	7,231
Punjab - - - - -	10,506	11,056
Total - - -	54,962	55,287

The great increase in the number of prisoners in the later months of the year is worthy of notice. In January the strength was only 53,246, but in the month of November it had risen to 58,315. From details given it appears that this addition of nearly 5,000 was in a measure due to all the groups, but in particular to the first, second, and fifth. No explanation has been given of this fact. In 1867 the differences in the jail population were less than half what have just been noted, and in that year the population stood at its maximum in January, and gradually fell to a minimum in December.

Sickness and mortality.

Out of 55,287 prisoners, 1,605, or 29 per 1,000, were daily under treatment. In October and November the constant sick-rate equalled 31 and 32 per 1,000, but in all the other months of the year the rate never fell below 26 or rose above 29. In 1867 it fluctuated between 26 in February and 42 in September. The total admissions of 1868 give a ratio of 941 per 1,000, the monthly minimum of 66 in December, and the maximum 91 in September.

During 1868, 1,674 prisoners died, or 30·28 per 1,000, the number of deaths varying from 103 in June to 174 in November, but in 1867 the extremes were 109 in June and 256 for November, and in 1866 they were 211 and 420.

A statement of facts for the last ten years is given in the annexed statement, from which it will be seen that the results for 1868 compared with previous years are extremely favourable, and the improvement is the more gratifying from being steadily progressive, so that it has the appearance of resting on a sound basis of sanitary reform.

STATEMENT showing the Sickness and Mortality among the Prisoners in the Bengal Presidency during the 10 years 1859–1868.

Year.	Average Strength.	Per 1,000 of Average Strength.		
		Daily Sick.	Admitted.	Died.
1859 - - -	46,733	52	1,336	82·77
1860 - - - -	46,348	57	1,491	110·81
1861 - - -	50,915	48	1,314	96·65
1862 - - - -	52,871	46	1,346	66·75
1863 - - -	52,401	48	1,368	85·84
1864 - - - -	52,598	41	1,227	70·19
1865 - - -	54,337	35	1,154	57·66
1866 - - - -	57,322	33	1,133	61·94
1867 - - -	54,962	32	1,079	38·32
1868 - - - - -	55,287	29	941	30·28

The statistics of 1868 are thus very satisfactory. They show a daily sick-rate of 29 contrasted with 52 in 1859, and 57 in 1860, a ratio of cases of sickness amounting to 941 compared with 1,491 in 1860, and a death-rate of 30·28 compared with 110·81 in 1860.

Chief causes of mortality in 1868.

Arranged in the order in which they have proved destructive to life, the chief diseases affecting prisoners in 1868 stand thus:—

Dysentery and diarrhœa - - -	12·06 per 1,000
Fevers - - - - - -	4·36 ,,
Respiratory diseases - - -	2·59 ,,
Atrophy and anæmia - - - -	2·50 ,,
Cholera - - - - -	2·48 ,,
Phthisis pulmonalis - - - -	1·64 ,,
Dropsy - - - - -	·67 ,,

Wounds and accidents	·38	per 1,000
Apoplexy	·38	,,
Spleen disease	·33	,,
Heart disease	·21	,,
Scurvy	·09	,,
Hepatitis	·09	,,
Small pox	·04	,,
All other causes	2·46	,,
Total	30·28	,,

It is remarkable to how few diseases the great mass of the mortality is due. Dysentery and diarrhœa taken together, and they cannot be considered separately, have proved fatal to nearly one-half of all those who died, and if the ratio from fevers be added, more than one-half of the total casualties are accounted for.

Chief forms of sickness in 1868.

Arranged in the order in which they have severally contributed to the sickness of the year, the diseases are placed differently.

Fevers	379	per 1,000
Dysentery and diarrhœa	183	,,
Abscess and ulcer	107	,,
Wounds and accidents	38	,,
Respiratory diseases	30	,,
Rheumatism	24	,,
Venereal diseases	21	,,
Eye diseases	16	,,
Atrophy and anœmia	11	,,
Spleen disease	7	,,
Cholera	5	,,
Scurvy	4	,,
Phthisis	3	,,
Dropsy	2	,,
Small-pox	1	,,
Hepatitis	1	,,
Apoplexy	7	,,
All other causes	102	,,
Total	941	,,

Results in groups of jails. First group.

Statements of comparative sickness and mortality are given for a period of ten years in the different groups of jails. The statistics of the first group, which includes 52 jails situated in Lower Bengal and Assam, bear unfavourable comparison with the other groups though they show considerable improvement on those of previous years.

STATEMENT showing the SICKNESS and MORTALITY among the PRISONERS of LOWER BENGAL and ASSAM during the 10 Years 1859–1868.

Year.	Average Strength.	Per 1,000 of Average Strength.		
		Daily Sick.	Admitted.	Died.
1859	15,359	54	1,543	105·15
1860	14,335	61	1,659	136·10
1861	13,924	57	1,502	87·69
1862	14,692	57	1,634	78·61
1863	15,087	56	1,704	92·73
1864	14,441	51	1,636	67·10
1865	14,598	47	1,639	58·85
1866	16,794	47	1,616	107·24
1867	15,692	41	1,408	56·65
1868	15,160	38	1,367	52·90

Dysentery and diarrhœa were the chief causes of death, and it is feared from peculiarities of climate and race that the vital statistics of jails in these parts of the country will never bear favourable comparison with other provinces.

INDIA.

Results in second group of jails.

The returns of the second group, which includes 39 jails, are as a whole more favourable than the first, particularly when viewed in relation to the excessive sickness and mortality of former years.

Contagious fever has been fatal from time to time, but during 1868, Gondah was the only jail of this group that suffered. Here 81 prisoners fell victims to it, and the death rate reached 154·93 per 1,000. Mozufferpore had a death rate of 102·39, due chiefly to bowel complaints and anœmia. Patna, Deegah, Chumparun, Chuprah, Bustee, and Futtehpore each give a death-rate somewhat above 50 per 1,000. In all the others the loss was under 50, and in some of them the returns of the year are extremely favourable. At Ghazeepore and Mirzapore the mortality amounted to only 13 per 1,000. At Azimghur and Jounpore it was little over 6. At Baraitch and Etah only 5, and in the Futtehgurh District Jail only $3\frac{1}{2}$ per 1,000.

STATEMENT showing the SICKNESS and MORTALITY among the PRISONERS of the DINAPORE, BENARES, OUDE, and CAWNPORE DISTRICTS during the 10 years 1859–68.

YEAR.	Average Strength.	Per 1,000 of Average Strength.		
		Daily Sick.	Admitted.	Died.
1859	8,605	57	1,313	115·51
1860	9,511	69	1,460	140·15*
1861	11,398	48	1,147	76·07
1862	13,975	38	1,045	51·31
1863	14,664	42	1,174	97·73
1864	15,450	31	930	67·12
1865	16,343	30	915	67·67*
1866	17,088	27	902	62·85*
1867	16,940	27	869	36·72
1868	17,400	25	753	28·22

Results in third group.

Twenty-two jails are embraced in the third group. The results are more favourable than those of the first and second groups, and bear comparison with previous years. The highest death-rate was 65 per 1,000 at Sehore among a small body of prisoners. Taking the jails in which the numbers were sufficient to form a proper basis of calculation, the highest mortality was at Nagpore, 39·43; and the lowest at Jhansi, 12·82. Dysentery and fevers were the chief causes of sickness and death.

STATEMENT showing the SICKNESS and MORTALITY in the NAGPORE and CENTRAL INDIA GROUP of JAILS during the 10 Years 1859–68.

YEAR.	Average Strength.	Per 1,000 of Average Strength.		
		Daily Sick.	Admitted.	Died.
1859	4,844	71	1,355	81·75
1860	4,981	61	1,428	65·04
1861	5,089	49	1,098	34·00
1862	5,316	49	1,410	39·69
1863	4,975	57	1,525	73·37
1864	5,448	47	1,316	51·76
1865	5,221	55	1,623	104·77
1866	4,956	55	1,690	65·58
1867	4,421	54	1,658	36·42
1868	4,440	46	1,338	27·48

Results in fourth group of jails.

Only 17 jails are included in the fourth group, and the results had been remarkably favourable, presenting a remarkable contrast to the years 1860–61, when the mortality was high from cholera and contagious fever.

STATEMENT showing the SICKNESS and MORTALITY in the JAILS of the AGRA, MEERUT, and ROHILCUND DISTRICTS during the 10 Years 1859–68.

YEAR.	Average Strength.	Per 1,000 of Average Strength.		
		Daily Sick.	Admitted.	Died.
1859	7,196	49	1,456	86·71
1860	7,695	58	1,868	170·50
1861	9,669	35	1,399	183·68
1862	8,534	47	1,514	97·02
1863	8,043	45	1,292	82·80
1864	7,641	33	969	74·73
1865	7,693	18	656	33·15
1866	7,787	15	571	19·96
1867	7,403	16	586	23·64
1868	7,231	16	489	16·87

The highest rate of admissions was at Almorah, where it amounted to 1,333 per 1,000; the highest mortality, 37·04, also took place at this jail. In the large central prison at Agra, with an average of 1,802 prisoners, the admissions were only 310 per 1,000, and out of this large body only 35 deaths occurred, or in the proportion of 19·42 per 1,000. At Etawah, out of a strength of 228, only one death took place, and there was also but a single casualty out of 301 prisoners in the Meerut District Jail, the ratios resulting being only 4·39 and 3·32 per 1,000.

Statistics of jails in the Punjab.

In the Punjab are 29 gaols, and here also the statistics of 1868 were very satisfactory.

STATEMENT showing the SICKNESS and MORTALITY among the Prisoners in the PUNJAB during the 10 Years 1859–68.

YEAR.	Average Strength.	Per 1,000 of Average Strength.		
		Daily Sick.	Admitted.	Died.
1859	10,729	40	970	22·28
1860	9,826	37	1,020	21·98
1861	10,835	46	1,273	81·59
1862	10,364	39	1,170	59·69
1863	9,632	43	1,126	66·03
1864	9,630	44	1,243	85·77
1865	10,482	29	981	34·92
1866	10,697	25	893	18·32
1867	10,506	28	1,028	24·66
1868	11,056	23	790	12·39

The lowest sick-rate, the lowest admission-rate, and a death-rate lower by one-half than any attained during the previous nine years, must be regarded as eminently successful. In the earlier years, in the Punjab as well as in the other groups of the Upper Provinces, contagious fever has been extremely fatal, and much of the great mortality has been due to this cause. During 1868, only one gaol in the Punjab suffered from this disease, and but for this outbreak, which must be regarded as preventible, even more satisfactory results would have appeared.

In the Rawul Pindee jail in which this fever occurred, only 10 deaths occurred from it in 1868, but during 1869 the mortality from this cause has been much higher. The total mortality in this gaol for 1868 was 29·68 per mille. The highest ratio of the province was at the female* jail at Lahore, 4·00, and also the greatest number of admissions, 2,146. In the Lahore central jail it was only 14·59, at Sirsa and Jhelum 3·7 per 1,000. The small amount of sickness in many of the jails, such as 213 per 1,000 at Ferozepore, 144 at Goozerat, and 109 at Shahpore, are deserving of notice.

Importance of particular diseases in causing sickness and death.

In considering the vital statistics of any body of men, it is remarkable how few are the diseases which chiefly make up the lists of sickness and death, and nowhere does this more strikingly appear than among Native prisoners. Cholera, fevers,

* There were only 150 prisoners in the Lahore female jail.

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dysentery, and diarrhœa, respiratory affections, with atrophy and anæmia, account for 608 out of 941 admissions, and for 24 out of every 30 deaths per 1,000. Statistics of the principal diseases for a period of 10 years are given in the following tables.

Cholera.

STATEMENT showing the ADMISSIONS and DEATHS from CHOLERA among the PRISONERS in the BENGAL PRESIDENCY during the 10 Years 1859–68.

YEAR.	LOWER BENGAL AND ASSAM.		DINAPORE, BENARES, OUDH, AND CAWNPORE.		NAGPORE AND CENTRAL INDIA.		AGRA, MEERUT, AND ROHILCUND.		PUNJAB.		TOTAL.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1859	40	18·95	24	12·55	1	·21	2	—	·8	·09	18	8·58
1860	84	38·29	47	20·82	38	16·06	107	23·00	·1	—	57	21·66
1861	34	13·21	32	11·84	5	2·36	92	40·85	9	4·43	36	15·21
1862	28	9·94	3	·79	11	4·70	4	1·99	22	8·98	15	5·52
1863	53	20·15	56	23·94	25	10·05	14	5·72	—	—	35	14·33
1864	45	17·31	25	8·80	28	11·56	·1	—	·1	·10	22	8·56
1865	23	10·15	12	4·59	51	27·39	5·0	2·86	·5	·19	15	7·19
1866	62	29·48	24	8·25	20	11·50	·1	·1	—	—	27	12·10
1867	17	7·58	13	5·73	·7	·23	6·0	1·76	7	3·90	11	4·93
1868	17	7·26	3	1·21	1·6	1·35	·3	—	—	—	6	2·48

The totals for 1868 compare very favourably with those of any former years; both admissions and deaths have been less than one-half what they have been before. At Rajshahye and Backergunge epidemics of the disease occurred, and that at the first of these jails was severe, 59 cases and 37 deaths having taken place.

Fevers among prisoners in 1868.

The statistics of fevers throughout the jails of the Presidency, as a whole, compare favourably with those of any of the preceding nine years. In none of them were the ratios of attacks and of deaths so small.

STATEMENTS showing the ADMISSIONS and DEATHS from FEVERS among the PRISONERS of the BENGAL PRESIDENCY during the 10 Years 1859–1868.

YEAR.	LOWER BENGAL AND ASSAM.		DINAPORE, BENARES, OUDH, AND CAWNPORE.		NAGPORE AND CENTRAL INDIA.		AGRA, MEERUT, AND ROHILCUND.		PUNJAB.		TOTAL.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1859	461	4·75	489	14·18	506	17·55	513	14·03	302	6·71	444	9·70
1860	537	5·44	573	36·06	538	11·04	772	66·93	347	4·88	543	22·42
1861	562	5·10	413	7·19	417	5·50	612	60·61	608	34·06	533	22·31
1862	614	5·65	384	5·87	597	7·34	867	54·37	567	28·78	583	18·27
1863	635	4·51	359	5·46	663	14·07	685	46·13	576	32·91	557	17·40
1864	586	3·75	290	9·52	532	10·46	512	50·65	755	53·80	514	22·11
1865	689	5·28	322	11·20	640	23·56	284	10·41	563	21·66	492	12·71
1866	600	4·70	407	24·23	742	9·89	225	2·70	517	9·16	488	11·53
1867	568	4·14	301	4·31	803	4·75	231	3·78	614	7·42	468	4·82
1868	570	3·43	252	6·38	591	5·85	175	2·63	367	2·99	379	4·36

The heavy mortality due to fevers in former years is mainly attributable to the contagious form of disease which proved so fatal in the Upper Provinces.

In 1867,* 29 prisoners in the Gondah Jail died of this fever. During 1868, 81 have died from the same cause. The fever disappeared in April and has not since recurred. The same fever is reported to have made its appearance in

* See page 62 of Sanitary Abstracts, 1869.

Seetapore Jail in January and February 1869, but the prompt measures adopted by Dr. Ellis were successful in extinguishing it, only two lives having been lost, and a third prisoner liberated on account of the disease.

Contagious fever in the Rawul Pindee Jail.

In 1867 the Rawul Pindee Jail also suffered and lost seven prisoners from this disease. During 1868 there were 10 deaths from the same cause, and during 1869, 88 more fatal cases. It is difficult altogether satisfactorily to trace the history of the disease. The 10 fatal cases in 1868 appear to have occurred among a gang employed on the Sohan River. The prisoners were healthy till towards the close of the year, but in the months of October and November no less than 409 admissions from fevers occurred, and in the three last months of the year 7 out of the 10 fever deaths occurred.

There are two reports by Dr. Lyons, the medical officer in charge,—his Annual Sanitary Report for 1868, and a special report on the fever in the following year, dated the 5th May 1869. In the first of these he writes—

"During the drought last year the river fell very low, and its stream was turned into a narrow "artificial bed by embankments in order to facilitate the building of the piers and arches of the "bridge. A partial stagnation of the water was the consequence, and was probably the cause "of the illness which ensued. Almost every prisoner fell ill, and the jail was practically broken "up for the two final months of the year. A large number died, and many were released for "severe sickness in the hope of saving their lives, but in many cases in vain. Of the prisoners "who survived, few are likely to be fit for hard labour for many months, and many, I should "say, are broken in constitution for the remainder of their lives. The sickness was not limited "to the prisoners, but was equally felt by the jail officials and the burkundazes. The darogah, "the mohurrir, and head jemadar fell ill, and were long in recovering. A large number of "burkundazes were rendered unfit for duty. The free coolies employed on the bridge likewise "suffered. There was no other disease of an epidemic nature which prevailed during the year.

"In the main jail a distinct case of relapsing fever occurred amongst the old residents, in "which the jaundiced condition of the conjunctivæ was well marked. The case, on detection, "was removed into a quarantine barrack, and on two or three of the other occupants of the "barrack becoming affected, the whole gang at the time in the barrack was removed into camp, "which measure had the effect of stopping the disease. I have no doubt that this disease "occurred spontaneously in this instance, and was probably due to the crowding of the jail with "debilitated and unwholesome prisoners transferred from the Sohan Jail in order that they "might obtain the shelter and comforts available in the main jail."

In the second report, writing of the epidemic in the current year (1869), Dr. Lyons traces its commencement to one case occurring on the 6th of January. Several others immediately followed. In the month of February the spread of the fever is reported to have been almost universal amongst the prisoners. Owing to the want of camp equipage the inmates of the jail could not be removed to tents, but by the end of the month they were accommodated in temporary huts which had been erected outside. In a day or two wet weather set in, and as the huts were not water-tight, the prisoners were sent back to the jail. The number of cases then rapidly increased, and there was heavy mortality (52 deaths) during March. In the end of the month tents were procured, the numbers within the jail were reduced, and sickness diminished. Dr. Lyons has no doubt that the fever was contagious. It spread not only to the attendants, but also to persons not resident in the jail, whose duties brought them in contact with the sick prisoners. Dr. Lyons remarks that the "separation of the affected from the healthy, and the "thinning of the number within the jail, were the means specially relied on for "checking the progress of the epidemic. These objects were carried out to the "fullest extent practicable with the means at command." With regard to the probable cause, he believes that "the epidemic was due to undue crowding."

Dysentery and diarrhœa.

The comparative prevalence of these diseases in different jails and in different years, forms an excellent test of their sanitary condition. During 1868 some jails suffered greatly from these affections, but the general statistics of the year show a gratifying reduction in them.

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STATEMENT showing the ADMISSIONS and DEATHS from DYSENTERY and DIARRHŒA among the PRISONERS in each GROUP of JAILS, and in the JAILS of the BENGAL PRESIDENCY as a whole, during the 10 Years 1859–1868.

YEAR.	LOWER BENGAL AND ASSAM.		DINAPORE, BENARES, OUDH, AND CAWNPORE.		NAGPORE, AND CENTRAL INDIA.		AGRA, MEERUT, AND ROHILCUND.		PUNJAB.		TOTAL.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1859 -	366	50·91	331	62·87	217	31·58	246	40·44	162	8·01	279	39·65
1860 -	412	60·90	340	55·93	208	20·08	261	41·45	163	8·55	297	41·17
1861 -	346	44·17	270	40·62	127	14·35	231	53·57	203	26·76	255	38·47
1862 -	402	40·63	231	32·06	173	18·43	153	24·02	171	12·46	248	27·94
1863 -	418	47·13	333	50·46	209	34·37	137	18·28	150	15·05	282	36·53
1864 -	360	27·01	236	36·24	179	20·20	89	8·51	118	14·44	221	24·03
1865 -	337	23·88	240	38·45	223	29·12	105	10·66	79	4·77	214	23·21
1866 -	376	46·09	167	21·01	240	24·62	78	6·68	76	2·43	205	23·25
1867 -	314	21·92	201	17·36	182	17·19	89	8·65	105	5·62	198	15·23
1868 -	323	22·29	174	11·61	146	11·71	62	5·67	88	3·08	183	12·06

In the first group the admissions and deaths from dysentery and diarrhœa were still high, but the casualties due to this cause during the last two years compare very favourably with the statistics of the eight previous years. In all the other groups there has been a marked advance, and the statistics of dysentery and diarrhœa in the presidency as a whole, contrast very favourably with their previous history.

Respiratory diseases.

In each province there has been a marked diminution, and the ratios of admissions and deaths from respiratory diseases during 1868 are, as a whole, more favourable than of any other year with which comparison can be made.

STATEMENT showing the ADMISSIONS and DEATHS from RESPIRATORY DISEASES among the PRISONERS in each GROUP of JAILS, and in the JAILS of the BENGAL PRESIDENCY, as a whole, during the 10 Years 1859–1868.

YEAR.	LOWER BENGAL AND ASSAM.		DINAPORE, BENARES, OUDH, AND CAWNPORE.		NAGPORE, AND CENTRAL INDIA.		AGRA, MEERUT, AND ROHILCUND.		PUNJAB.		TOTAL.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1859 -	86	6·25	36	5·45	41	6·81	72	6·53	32	2·05	58	5·24
1860 -	63	5·65	33	5·15	44	2·21	51	8·71	35	2·75	47	5·07
1861 -	48	4·96	27	3·16	24	2·36	35	4·66	29	4·61	34	4·18
1862 -	41	4·77	22	2·86	34	2·26	21	3·39	26	2·80	29	3·40
1863 -	48	3·91	31	4·23	32	3·42	25	2·36	25	3·43	34	3·63
1864 -	52	3·25	15	1·94	34	3·31	21	2·62	26	3·53	30	2·83
1865 -	50	4·25	16	1·65	37	4·40	29	1·95	20	1·43	30	2·61
1866 -	45	5·12	12	1·64	58	5·04	22	1·41	32	2·06	31	3·00
1867 -	50	5·61	18	1·83	52	3·84	27	2·16	28	2·85	33	3·31
1868 -	5	3·76	16	1·84	47	2·03	23	3·04	29	2·08	30	2·59

The number of cases of admissions from diseases occurring in many of the jails still requires attention, as they indicate, not so much acute inflammatory affection, as cases in which the lungs have suffered in a generally lowered standard of health.

Quarantine in jails.

The question of providing quarantine accommodation for new arrivals has been discussed in previous annual reports, and how far such a measure can practically be carried into effect has been under the consideration of the Government. It would certainly be very desirable to have adequate quarantine wards in every jail, and even in every lock-up, but the outlay would be very great. In small jails the changes which occur in the population are proportionately, and in many of them, indeed, absolutely, much more numerous than in the large prisons; and this fact presents a difficulty of no small magnitude. At the same time it shows that the large prisons, in which the numbers are great, and in which quarantine is, therefore, all the more

necessary, can be protected in this manner at a comparatively trifling cost. "In "the central jails," it is remarked in the Government resolution, "the average "number of admissions within the given period of 15 days is small, in proportion to "the total number of prisoners, and, therefore, in central jails, provision should be "made for the temporary segregation of new arrivals. But instead of fresh arrivals "being put in barracks calculated to hold six or eight persons, it would be far "better to put each individual into a separate cell, so far as such a disposition may "be practicable without serious expense.

"As in the larger district jails, the number likely to be affected is also large "compared with the number of admissions, some rule for the provision of quaran- "tine accommodation should obtain. In such cases the time passed in jail pending "the trial should, if in separate confinement, be reckoned as a part of the 15 days' "isolation. The admission of such a principle in the calculation will very much "diminish the amount of quarantine accommodation to be provided.

"In smaller district jails the necessity for the provision of such accommodation "is not so urgent, but segregation may be carried out so far as is possible under "existing arrangements. When new jails of whatever class, however, are hereafter "built, the provision of observation wards will be easy, and as the total number of "prisoners held within their walls will be the same, whether the wards be built or "not, the additional expense of providing means of segregation should not be very "great. But in all these cases, separate cells, and not wards, should be provided "for the purpose."

With special reference to cholera, and in order that no measure may be wanting which is calculated to throw light on the manner in which it spreads, a few jails within the limits of the endemic area might be selected, and the effect of strict quarantine narrowly observed.

Jail statistics.

A special committee was ordered by Government to consider the subject of jail statistical forms, and it was hoped that a uniform system may be adopted, commencing with the Annual Report for 1869.

PART IV.

GENERAL POPULATION.

Since the appointment of Local Sanitary Commissioners the duty of recommending measures to improve the health of the people, and of collecting available statistics regarding prevalent diseases, has devolved upon these officers within the limits of their respective Provinces. In a resolution by the Government in the Home Department, under date 10th September 1868, the duties of the Sanitary Commissioners with the local governments and administrations have been fully detailed. Briefly stated they are as follows:—

"(1.) To ascertain the existing sanitary condition of the country under their charge, and suggest measures for its improvement.

"(2.) To advise Local Governments and Administrations in matters concerning the public health.

"(3.) To collect information as to the unusual prevalence of any particular disease or diseases in any particular locality, to suggest measures for their removal, and to supervise measures for the prevention of venereal disease in the neighbourhood of Military Cantonments.

"(4.) In case of any unusual visitation, to proceed to the spot, endeavour to trace its source, and aid in carrying out remedial measures.

"(5.) To examine all localities in which cholera, fevers, and similar diseases are endemic or localized, and propose means for removing them.

"(6.) To assist in organizing, as well as circumstances will allow, a proper system of registration of births and deaths, unless this duty be entrusted by the local government to some other officer.

NOTE.—See page 260, "Memorandum."

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" (7.) To prepare a medical topography of their respective Provinces or Presidencies.

" (8.) To submit to Local Governments and Administrations a carefully digested annual report of their proceedings, and in case of the outbreak of epidemic diseases, to forward early reports of all their proceedings.

" (9.) To furnish the Imperial Sanitary Commissioner with copies of their reports, and generally to keep him informed on all matters of sanitary importance."

In all the provinces, the Sanitary Commissioners had been employed in the matters connected with these duties, but Dr. Cuningham had not received their annual reports, and was therefore unable to attempt any general history of disease throughout the country for the year under review, or to state what progress had been made in carrying out measures of reform. The important question of a uniform system of vital statistics* was under the consideration of Government. The submission of Dr. Cuningham's report had been delayed by absence on special duty in cantonments and camps affected by cholera, with the labours involved in an inquiry into the circumstances of the wide spread epidemic of 1869.

*Vide page 13.

Summary for 1868.

Detail of the Admissions and Deaths of the European and Native Armies and the Jail Population of the Bengal Presidency.

Causes of Admissions and Deaths.	Admitted into Hospital and Died in and out of Hospital.											
	European Army.		Native Troops.								Jail Population.	
	Bengal Presidency.		Bengal Proper and Assam.		Upper Provinces.		Central India Force.		Punjab Frontier Force.		Bengal Presidency	
	Average Strength 31,560 Admitted - - 44,942 Died - - - 635		Strength 7,961 Admitted 10,583 Died - 281		Strength 32,809 Admitted 36,977 Died - 463		Strength 4,047 Admitted 3,428 Died - 42		Strength 10,308 Admitted 11,104 Died - 134		Average Strength 55,325 Admitted - - 51,758 Died - - 1,674	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Variola	14	—	2	—	45	—	—	—	1	1	57	2
Varioloides et Varicella	8	—	2	—	10	4	1	—	1	—	109	—
Morbilli	23	—	15	2	22	—	6	—	—	—	27	—
Scarlatina	2	—	—	—	—	—	—	—	—	—	—	—
Tonsillitis	553	1	15	—	95	—	8	—	25	—	43	1
Diphtheria	—	—	—	—	—	—	—	—	—	—	1	—
Influenza	146	1	11	—	47	—	6	—	35	—	28	—
Parotitis	11	—	15	—	82	—	4	—	3	—	70	1
Pertussis	1	—	—	—	—	—	—	—	—	—	—	—
Febris Intermittens	10,019	7	3,966	17	16,882	38	1,451	2	4,453	6	19,552	78
" Remittens	1,311	31	52	9	291	27	17	6	45	7	1,268	164
" Continua	3,307	53	16	2	42	4	5	—	13	—		
Ophthalmia	818	—	146	—	716	—	184	—	264	—	877	—
Erythema	11	—	—	—	5	—	1	—	2	—	2	—
Erysipelas	33	—	1	—	14	—	—	—	12	—	48	8
Furunculus	397	—	27	—	211	—	13	—	102	—	98	—
Anthrax	18	—	6	—	4	—	3	—	5	—	44	2
Gangræna	—	—	—	—	1	—	—	—	—	—	7	3
Pyæmia	1	—	—	—	1	—	—	—	—	—	1	2
Dysenteria	1,109	48	1,035	17	2,000	26	98	1	516	7	5,492	483
Diarrhœa	2,516	6	704	13	1,291	24	74	2	592	3	4,622	183
Cholera	77	57	62	20	27	26	—	—	1	—	318	135
Rheumatismus	1,676	3	518	4	1,298	5	124	2	266	—	1,135	5
Syphilis Primaria	1,776	—	115	—	581	—	67	—	75	—	499	—
" Secundaria	778	4	46	1	223	2	11	—	54	—	300	7
Iritis Syphilitica	25	—	1	—	6	—	—	—	3	—	11	—
Gonorrhœa	2,568	—	56	—	238	—	35	—	48	—	127	—
Bubo	628	—	51	—	214	—	21	—	27	—	134	—
Orchitis	191	—	18	—	86	—	5	—	9	—	44	—
Phymosis	29	—	6	—	17	—	2	—	1	—	58	—
Verruca	18	—	1	—	—	—	—	—	—	—	1	—
Condyloma	9	—	—	—	5	—	2	—	—	—	5	—
Lepra	—	—	1	—	7	—	1	—	2	—	81	2
Elephantiasis	—	—	—	—	—	—	—	—	—	—	13	1
Hydrophobia	1	1	—	—	—	—	—	—	—	—	1	1
Scorbutus et Purpura	24	—	107	7	49	1	2	—	15	—	241	7
Ebriositas	762	9	3	—	7	—	1	—	7	—	—	—
Bronchocele	2	—	21	—	11	—	—	—	—	—	13	—
Aphtha	4	—	—	—	4	—	4	—	—	—	25	—
Porrigo	9	—	4	—	10	—	1	—	1	—	28	—
Scabies	43	—	304	—	752	—	66	—	100	—	1,228	—
Vermes	10	—	4	—	—	—	—	—	—	—	27	1
" Tænia	202	—	2	—	1	—	—	—	3	—	5	—
" Dracunculus	3	—	8	—	97	—	166	1	124	1	123	—
Anæmia	149	2	7	1	107	—	—	—	30	—	196	31
Cancrum Oris	—	—	—	—	—	—	—	—	—	—	3	3
Anasarca	12	—	5	2	4	1	1	1	—	—	120	28
Scirrhoma	5	8	—	—	3	3	—	—	—	—	7	4
Podagra	7	—	—	—	1	—	—	—	—	—	—	—
Scrofula	48	2	1	—	15	—	3	—	—	—	36	2
Phthisis Pulmonalis	240	49	11	9	37	11	1	1	15	4	251	85
Hæmoptysis	56	—	3	—	15	1	—	—	2	—		
Abscessus Psoanus	1	1	—	—	—	—	—	—	—	—	2	1
Tuberculosis Mesenterica	—	—	—	—	3	2	—	—	—	—	9	9
Morbus Coxæ	—	1	—	—	—	—	—	—	—	—	—	—
Encephalitis	7	2	—	—	1	—	1	1	—	—	5	1
Meningitis	6	1	—	1	2	—	—	—	—	—	3	3
Insolatio	269	90	2	3	9	7	—	—	8	1	33	21
Apoplexia												
Paralysis	54	5	4	—	38	1	8	—	15	—	41	4
Tetanus	2	2	2	2	2	1	—	—	—	—	7	1
Epilepsia	105	—	2	—	13	1	3	—	3	—	103	10
Delirium Tremens	138	12	—	—	—	—	—	—	—	—	2	—
Chorea	10	—	—	—	—	—	1	—	—	—	2	—

Detail of the Admissions and Deaths of the European and Native Armies and the Jail Population of the Bengal Presidency—*continued.*

Causes of Admissions and Deaths.	Admitted into Hospital and Died in and out of Hospital.											
	European Army.		Native Troops.								Jail Population.	
	Bengal Presidency.		Bengal Proper and Assam.		Upper Provinces.		Central India Force.		Punjab Frontier Force.		Bengal Presidency.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Hysteria	—	—	1	—	—	—	—	—	—	—	5	—
Mania	28	—	9	—	7	—	1	—	1	—	159	7
Melancholia	6	—	—	—	1	—	—	—	—	—	3	—
Dementia	46	1	—	—	3	—	2	—	—	—	13	1
Cephalæa	517	—	62	—	76	—	14	—	18	—	39	—
Vertigo	—	—	1	—	8	—	1	—	—	—	—	—
Neuralgia	115	—	61	—	164	—	20	—	95	—	70	—
Sciatica	4	—	9	—	27	—	4	—	20	—	8	—
Odontalgia	9	—	10	—	25	—	8	—	10	—	28	—
Otitis	324	—	68	—	177	—	12	—	52	—	140	—
Dysecœa	14	—	—	—	1	—	—	—	2	—	—	—
Cœcitas	9	—	11	—	15	—	—	—	6	—	16	—
Pericarditis	17	3	2	3	—	—	1	—	—	1	9	4
Morbus Cordis	278	23	1	—	11	5	—	—	1	1	16	8
Angina Pectoris	11	—	—	—	—	—	—	—	—	—	—	—
Aneurisma	23	18	—	—	3	2	—	—	—	—	2	1
Palpitatio	22	—	—	—	1	—	—	—	—	—	—	—
Syncope	4	1	1	—	3	—	—	—	—	—	1	—
Varix	33	—	—	—	4	—	—	—	2	—	—	—
Phlebitis	2	—	—	—	—	—	—	—	1	—	2	—
Epistaxis	19	—	1	—	6	—	—	—	4	—	25	—
Laryngitis	6	1	2	—	5	—	—	—	8	—	15	—
Bronchitis	1,334	6	474	15	648	9	29	—	261	2	719	32
Pleuritis	111	—	13	2	109	—	7	—	29	1	238	10
Pneumonia	82	16	25	5	112	21	15	1	63	12	423	91
Asthma	14	—	35	1	62	3	9	—	7	1	188	9
Gangræna Pulmonum	—	—	—	—	—	—	—	—	—	—	2	2
Ozœna	3	—	—	—	—	—	—	—	—	—	8	—
Stomatitis	23	—	1	—	17	—	2	—	—	—	22	1
Gastritis	6	2	—	—	3	—	3	2	—	—	21	5
Enteritis	8	2	2	—	4	5	—	—	1	1	12	10
Peritonitis	7	1	2	2	2	—	—	—	3	1	11	6
Obstipatio	92	—	16	—	32	—	10	—	30	—	269	—
Ileus	—	—	1	1	1	1	—	—	—	—	3	1
Hernia	37	—	7	—	6	—	1	—	3	—	21	1
Dyspepsia	1,078	—	137	—	277	—	55	—	55	—	878	—
Colica	267	—	101	1	506	—	25	—	341	—	800	—
Hæmatemesis	13	—	1	—	5	1	—	—	2	—	7	1
Melæna	1	—	—	—	—	—	—	—	—	—	3	1
Hæmorrhois	250	—	17	—	137	—	6	—	17	—	184	—
Fistula in Ano	28	—	—	—	17	—	1	—	7	—	33	—
Splenitis	153	—	65	4	196	5	7	—	39	—	389	17
Hepatitis	1,578	108	24	4	78	3	7	2	16	5	58	5
Cirrhosis	1	1	—	—	1	—	—	—	—	—	2	2
Icterus	154	3	11	—	46	—	7	—	10	—	83	8
Ascites	10	1	1	1	4	—	2	1	1	1	33	8
Nephritis	41	5	3	1	23	1	—	—	25	—	30	9
Hæmaturia	7	—	—	—	1	—	1	—	—	—	11	—
Ischuria	16	—	—	—	2	—	1	—	—	—	5	—
Enuresis	17	—	—	—	—	—	—	—	—	—	—	—
Diabetes et Diuresis	5	—	—	—	6	—	—	—	6	—	17	1
Cystitis	9	—	4	—	5	—	—	—	—	—	2	1
Lithiasis	3	—	4	—	8	—	—	—	10	—	3	—
Calculus	3	—	—	—	4	—	—	—	3	—	6	1
Strictura Urethræ	105	—	6	1	14	1	5	—	4	—	35	1
Fistula in Perineo	5	—	—	—	—	—	—	—	—	—	2	—
Extravasation of Urine	—	1	—	—	—	—	—	—	—	—	—	—
Varicocele	10	—	—	—	—	—	—	—	2	—	—	—
Orchitis	449	—	32	—	84	—	15	—	24	—	52	—
Hydrocele	20	—	1	—	11	—	—	—	—	—	55	—
Hæmatocele	1	—	—	—	—	—	—	—	—	—	—	—
Fungus Testis	2	—	—	—	1	—	—	—	—	—	—	—
Ovarian Dropsy	—	—	—	—	—	—	—	—	—	—	1	—
Leucorrhœa	—	—	—	—	—	—	—	—	—	—	1	—
Paramenia	—	—	—	—	—	—	—	—	—	—	11	1
Hysteritis	—	—	—	—	—	—	—	—	—	—	1	—
Partus	—	—	—	—	—	—	—	—	—	—	55	—
Abortus	—	—	—	—	—	—	—	—	—	—	14	1
Arthritis	35	—	3	—	3	—	7	—	2	—	4	—
Synovitis	63	1	3	—	13	—	4	—	17	—	28	1
Pleurodynia	6	—	3	—	14	—	4	—	1	—	14	—
Lumbago	117	—	34	—	214	—	13	—	131	—	112	—
Necrosis	11	—	—	—	4	—	—	—	—	—	10	—
Caries	6	—	—	—	6	—	2	—	3	1	9	—
Contractura	11	—	—	—	2	—	—	—	—	—	2	—
Periostitis	77	—	3	—	11	—	3	—	3	—	10	—
Exostosis	4	—	—	—	—	—	—	—	—	—	1	—
Skin Diseases	346	—	125	—	414	—	12	—	161	—	412	—
Phlegmon and Abscess	1,595	1	402	—	2,020	—	230	1	586	1	3,254	6
Whitlow	129	—	24	—	97	—	11	—	53	—	188	—
Ulcer	1,157	—	288	1	1,155	—	61	—	521	—	2,279	9
Tumour	10	—	5	—	20	—	—	—	4	—	25	1
Atrophy and Debility	441	1	95	11	256	15	4	1	40	—	437	105
Burning	47	—	22	—	121	—	15	—	49	—	77	1
Dislocation	29	—	2	—	21	—	—	—	9	—	21	—
Subluxation	806	—	71	—	283	—	29	—	52	—	34	—
Fracture	146	—	6	—	61	—	3	—	25	—	187	4
Contusion and Contused Wound.	1,729	—	332	—	2,252	—	246	—	914	—	1,255	1
Concussion of Brain	5	—	—	—	1	—	—	—	—	—	—	—
Incised Wound	325	—	156	—	164	1	30	—	44	—	304	6
Gunshot Wound	17	—	8	—	47	1	1	—	35	2	5	—
Accident	—	12	—	—	—	3	—	—	—	2	—	—
Suicide and Suicidal Wounds.	4	11	1	2	2	6	—	—	—	—	2	4
Removal of Eyeball	1	—	—	—	—	—	—	—	—	—	—	—
Amputation	11	—	1	—	1	—	—	—	—	—	—	—
Poisoning	2	—	—	—	4	—	4	2	6	1	11	—
Snakebite	1	—	—	—	5	2	3	—	1	—	2	1
Struck by Lightning	1	—	—	—	6	—	—	—	—	—	—	—
Drowning	—	15	—	2	—	1	—	—	—	1	—	—
Asphyxia	—	1	—	—	—	—	—	—	—	—	1	—
Foot Sore	114	—	245	—	1,156	—	78	—	358	—	—	—
Murder	—	2	—	—	—	2	—	—	—	—	—	—
Execution	—	2	—	—	—	—	—	—	—	—	—	—
Punished	1	—	3	—	18	—	—	—	29	—	217	—
Causes not specified	23	—	151	1	6	1	—	—	3	1	39	—
Killed in Action	—	—	—	—	—	2	—	—	—	17	—	—
Died absent from their Regiments.	—	—	—	113	—	187	—	15	—	52	—	—

(Signed) J. M. Cuningham, M.D.,
Sanitary Commissioner with the Government of India.

INDIA.

ABSTRACT OF CALCUTTA MUNICIPAL REPORT FOR 1868.

A special Committee was appointed to report on the existing Municipal Establishments, and to consider the practicability of reducing the expenditure provided in the Municipal budget of the previous year. The Committee submitted their report in January 1868, proposing a considerable saving in the general expenditure of the Municipal fund for the year under review. It was resolved by the Justices that, in consideration of the sanctioned revision and reduction, the house rate be reduced from 10 to 8 per cent. with effect from the second quarter of 1868; it was, however, subsequently found necessary to raise the tax to its former rate of 10 per cent.

By a resolution of the justices the amalgamation of the drainage road and conservancy departments was determined upon; Mr. Anley assuming charge of the amalgamated department. This arrangement, however, did not work satisfactorily, and the separation of the road and conservancy departments was determined upon for the current year.

Loans.

No further loans were required during the year. A fund was created for the gradual liquidation of the municipal loan. A sum of Rs. 94,000 being invested for that purpose in 4 per cent. government securities.

General income and expenditure.

Income.—The income realized during the past year from every ordinary source amounted to Rs. 18,55,758, and consisted of the following items:—

Realised by the House rate - - -	Rs.	9,44,239	7	8	
Ditto Lighting rate - - - -	,,	1,97,703	10	7	
Ditto Police rate - - - -	,,	2,93,808	4	9	
Ditto Licences on trades and professions	,,	2,17,345	14	4	
Ditto ,, for carriages and horses -	,,	96,744	11	0	
Ditto Registration of carts and hackeries	,,	41,880	2	3	
Total, Rs. -					17,91,722 2 7

to which have to be added miscellaneous receipts, viz:—

Judicial fines for breaches of conservancy laws - - - -	Rs.	13,406	15	10	
Notices of demand and warrants - -	,,	14,466	1	6	
Rent of town hall - - -	,,	11,354	6	10	
Fees from Tolah Mehters - - -	,,	5,115	14	3	
Rent from public tanks, latrines, &c. -	,,	8,925	7	6	
Rent of municipal railway - -	,,	3,000	0	0	
Miscellaneous receipts - - -	,,	7,767	1	9	64,035 15 8
Total, Rs. -					18,55,758 2 3

which may be considered the income of the Municipality for the past year from ordinary receipts.

The extraordinary receipts were as follows:—

Sale proceeds of surplus lands - -	Rs.	1,47,284	4	3
Ditto Government paper -	,,	31,803	8	2
Amount received from the suburban Municipality for stone ballast supplied to them - - - - -	,,	28,364	5	6
Total Rs. -		2,07,452	1	11

If to the foregoing income be added the cash balances remaining available on the 31st December 1867, and the amount refunded from the water supply account, which was advanced in the previous year from the surplus of the general account, the amount actually at the disposal of the Justices during the past year was Rs. 28,25,116-11-10, as shown in the margin, but in addition to this account, there was at the close of the year Rs. 367,895 due from the water supply account, which is recoverable at pleasure.

Ordinary income - -	Rs.	18,55,758	2	3
Extra income - - -	,,	2,07,452	1	11
Balance 31st December 1867	,,	2,49,691	9	2
Refund for water supply -	,,	5,12,214	14	6
	Rs.	28,25,116	11	10

The total expenditure for the year amounted to Rs. 26,55,068 :—

Payment towards sinking fund	Rs.	94,000
Interest on loans	,,	3,40,737
General establishments, office rent, and contingencies	,,	2,54,290
Cremation of dead paupers	,,	2,162
Municipal pauper hospital	,,	60,869
Burning ghat improvements	,,	1,978
Town Hall	,,	7,567
Conservancy department	,,	1,80,060
Road department	,,	3,19,724
Drainage department	,,	3,11,688
Working of engines for town water supply	,,	49,113
Street-watering	,,	38,957
Purchase of water carts, aqueduct repairs, &c.	,,	12,200
Construction of public necessaries	,,	1,19,162
City improvements, railway, and slaughter-houses	,,	2,55,748
Lighting of the town	,,	2,08,083
Cost of lamp-posts, &c.	,,	1,36,067
Police charges	,,	2,62,663
Total Rs.		26,55,068

The re-assessment of the town was proceeded with under Section 67 of Act VI., 1863. Also by Act V. of 1868, which came into force on the 1st July 1868, the southern portion of Hastings became subject to the provisions of the Municipal Acts of Calcutta.

Water supply works.

A report by the chief engineer, Mr. W. Smith, C.E., shows that the works are rapidly advancing towards completion. The expenditure for the year amounted to Rs. 23,95,559, of which Rs. 10,06,194 were disbursed in England, and Rs. 13,89,365 in India. The total actual expenditure up to the end of 1868 was Rs. 42,42,559, against an estimated total of Rs. 42,55,000. All the works at Pultah and Tallah were in an advanced state, and several of them completed. At Wellington Square, from the unfavourable description of the soil, the construction of a covered reservoir taxed the energy and skill of the contractors to the utmost. The level of the foundations had to be altered, which reduced its depth so as to contain six in lieu of eight million gallons.

The arrangements for securing thoroughly filtered water were also carefully considered, and the following filtering media decided on for half the filter beds, the depth of each description of sand for the remaining filter beds being still under consideration:—

	Feet.	Inches.
Top layer of Pultah sand	2	6
Second layer coarse Magra sand	0	4
Five layers of pebbles of various sizes	1	3

When it is remembered that the contractors, Messrs. Brassey, Wythes, and Aird, did not commence operations till January 1867, it must be admitted, that the rapidity which has marked the progress of the Water Supply Works is truly astonishing, and leaves but little room for doubting that in the early part of next year the inhabitants of Calcutta will be in full possession and enjoyment of the comfort and blessing of a plentiful supply of pure water.

The works, indeed, are most costly, but when compared with the benefits which must follow on the completion of this great undertaking, the expense will, it is believed, not be considered extravagant by the intelligent portion of the rate-payers.

"Certain it is that had the justices endeavoured, as many advocated, to construct the works themselves, the expenditure would have exceeded what the cost will now be, and at this present time the prospect of having the works in operation early next year (1870) would not be present before us."

The arrangements made by the contractors were admirable, and all the shipments of pipes, machinery, and material of all sorts, arrived with unfailing regularity.

The chairman bears testimony to the professional experience, ability, and energy of Mr Paton, the contractor's agent in India, and brings also to notice the

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Drainage department.

valuable services of the chief engineer, Mr. W. Smith, who devoted himself with no common ability to the supervision of these important works.

A report containing a detailed account of work is given by Mr. Anley, late officiating engineer to the Municipality.

At the close of 1867 there remained only 9,505 lineal feet of sewers to be done to complete the area bounded by Park Street, Chowringhee, and Lower Circular Road. The close of 1868 found this area in complete operation, and the experiment has been a success.

Before the periodical rains set in, with a few exceptions, all the open ditches, which formed a part of the old system, had been filled in, and the drainage of the area south of Park Street voided into the sewers of the new system, and carried away from the town. Formerly there were gaping ditches down which, at every rainfall, the sewage from one of the most filthy parts of the town found its way, bringing down with the stream a seething mass of filth and garbage.

The area that has been brought into operation had a severe trial, as it had to pass off the surface drainage (rainfall) of an unusually wet season. The returns published by the Meteorological Office show that up to the 7th October there had fallen 91·49 inches of rain; this is more than is known to have fallen in Calcutta in any year since returns have been kept. The yearly average for the last 14 years is 68·51 inches. In 1864 the cyclone raised the total to 84·22 inches. Notwithstanding this circumstance, and that the pumping station was not complete, the streets, except in one or two instances, during a very heavy shower, were free, and the water passed off.

In sewers proper there had been work done during the year to the extent of one mile six furlongs 266 feet. Main entrances built to 88 sewers. Much also had been effected in house drainage. A sub-committee was appointed to secure the early completion of the works at the permanent pumping station. The engines had been twice under steam, and were found to act well, but could not be regularly used until the completion of the outfall works.

The extension of the drainage scheme to the northern portion of the town occupied the attention of the Justices during the year under review. In June Mr. Anley submitted an estimate, based on actual working rates, for completing Mr. Clark's drainage scheme, and amounting to Rs. 67,09,000. The consulting engineer and Dr. Macrae, officiating Health Officer, submitted reports, pointing out the disgraceful state of the whole town owing to the want of any proper system of drainage, and recommended that the scheme should be extended, as the work in the area completed was satisfactory.

The necessity of doing something to improve the sanitary condition of the northern part of the town was admitted by all, and the state of the mud trenches which intersect the town has been described year after year in reports without number. These drains maintain their former reputation, and it is difficult to understand how human life can exist in their vicinity. Certain sewers, recommended by the drainage committee as far as Colootollah, which would be about half the town, the Justices decided on at once taking in hand, the contract being given to Messrs. Burn and Co., but to extend the drainage scheme north of Colootollah was, without assistance from Government, absolutely impossible, as the present sources of municipal revenue only enabled the Corporation to complete the drainage up to that point.

The Justices are in no way responsible for the drainage scheme. The system was approved, sanctioned, and in the course of being carried out under the orders of Government, long before the Legislature vested the property of the town, and the management of its municipal affairs in a Corporation. The late Municipal Commissioners of Calcutta, who acted entirely under the orders of the local government, proposed the present drainage scheme in December 1855, and the estimate, prepared by Mr. Clark, then amounted only to Rs. 26,47,545, which he considered would be sufficient for the effectual drainage of Calcutta.

The Government appointed a Committee to report on the scheme, who reported favourably on the system, but, with a view to secure a greater inclination, suggested that the main sewers should be sunk at Entally below the level proposed by Mr. Clark, thus making pumping up the sewage a necessary condition. This alteration, though doubtless most desirable, has imposed an enormous expenditure on the town, and apart from the first outlay, the working expenses of the out-fall pumping station will certainly cost from 60 to 70,000 rupees per annum, which is far more than the town can afford to pay.

This Government committee submitted a revised estimate amounting to Rs. 32,85,000.

The corporation was formed in 1863, and found the drainage works in progress, and for the last five years the work has been pushed on vigorously, but when the extension of the drainage scheme was discussed in June 1868, the Justices found themselves in a most embarrassing position. Miles of enormous sewers had been constructed which would remain almost useless until the other sewers were completed; besides stupendous outfall works for the whole town were on the eve of completion, and to allow these to be worked at an expense of about 60,000 rupees per annum for the very small area south of Park Street seemed preposterous. The only alternative was to extend the scheme to the limit of the financial capability of the town to Colootollah.

Section 89 of Act VI., 1863 (Bengal), imposes the obligation on the Justices of completing a system of drainage, and as Mr. Clark's scheme was then in progress, the intention of the Legislature was evidently that the corporation should push on these works.

This has been done; and, up to the close of last year, the justices have from time to time expended Rs. 31,59,889 for the purpose of improving the drainage of the town, and a further sum of over 11 lakhs has been sanctioned.

The works carried out have improved the sanitary condition of the areas into which they have been introduced, and it is indeed difficult to over-estimate the benefits which must accrue from a complete system of drainage.

For example, the area south of Park Street may be pointed to. Only a few years ago, abominable open mud trenches existed on either side of many of the streets. All these are now done away with, and every street has been sewered, and has either footpaths or neat surface drains. The work has been so gradual that the improvements have been carried out without attracting much attention. However, it may be confidently asserted, that any person who has been absent from Calcutta for a few years would, on his return, now be struck with the improved appearance and sanitary arrangements of all the southern portion.

The chairman dwells on the subject of what the Justices have done, and justifies the policy adopted by them, because many persons are in the habit of fixing the responsibility of the drainage scheme on the Corporation, which is absolutely incorrect, as Government adopted the system at present being carried out.

The Government would probably not have sanctioned the work had they had any idea of the ultimate cost. The estimate was, doubtless, faulty, owing to sewers never having been constructed in this country, which rendered it quite impossible either for the Engineer, or the Committee appointed by Government, to obtain any reliable data on which to base their calculations. It must, however, be remembered that the rates of labour are more than double what they were in 1857, and the price of materials has also increased greatly, and these reasons will account for a great portion of the difference between the estimated and actual cost of sewer constructed. It is now, however, obviously useless to endeavour to account for the large increase over the estimated cost. It is enough to know for a fact that the work cannot be done for less than at existing rates, and that to complete the whole of the drainage works, according to the modified system proposed by the Committee in their report, dated 12th June 1868, about 40 or 50 lakhs more will be required, whereas the town cannot undertake to provide more than about 15 lakhs.

The question was the source from which the balance required could be obtained. It was considered that direct taxation had reached its full limit, but that the only feasible plan was to raise, by some indirect tax, about 2 lakhs per annum, and to move the Supreme Government to grant the Corporation a loan at 4 per cent. on the security of the tax which may be decided on; and that a sinking fund should be formed for the liquidation of the debt. A grant towards the drainage works from the Imperial Treasury might also be solicited.

Footpaths, roads, &c.

In connexion with the drainage works, footpaths were completed, in the year under review, to a length of 6,184 lineal feet, and a number of footpaths previously constructed were repicked and relaid to section.

The quantity of stone-metal obtained from ships visiting this port during 1868, amounted to 1,43,260 cubic feet. This, though considerably in excess of what was obtained in 1867, is still far less than used to be procured in former years. Now, also, this ballast has to be purchased from the agents or captains of the ships at from 1 to 3 rupees per 100 cubic feet, whereas formerly the captains were glad to get rid of the stone on the municipality paying the simple cost of discharging it from

the ship. This causes a considerable increase in the cost of repairing the roads of Calcutta.

The cost of purchasing the imported stone, including charges for landing and breaking it, averaged during the year Rs. 18,12 per 100 cubic feet. The quantity of indigenous broken stone amounting to 396,187 cubic feet, was obtained at a contract rate of 30 rupees per 100 cubic feet. The new line of road called Beadon Street was completed during the year and opened for traffic.

Slaughter-houses.

The construction of these buildings had been considerably delayed by having to order the materials from England, and also by damage caused by the last cyclone. During the year under review, the work had been pushed on vigorously, and was almost completed.

Lighting of town.

The actual number of lamps lighted on the 31st December 1860 were 2,600 by gas and 650 by oil; 59 additional lamps were to be lighted, and as funds permitted, 109 of the oil lights were to be converted into gas.

When it is remembered, that on the 1st July 1863, on which date the affairs of the town were entrusted to the Corporation, there were only 1,672 lamps, of which 968 were supplied with gas and 704 by oil, it must be admitted that the improvement of the town illumination has received the fullest consideration from the Justices.

Public latrines.

The total number of public latrines completed, at the close of the year under review, was 24, all of which have been rented out on favourable terms, and, in most cases, to former owners. As all public latrines, whether belonging to the Justices or to private individuals, are subject to the conservancy laws as well as to the bye-laws, the arrangement with private owners secures the object in view without entailing any expense upon the town. Dr. Tonnerre, the Health Officer, has strong objection to public privies being the property of private individuals; however, on this point the Chairman is unable to agree with him. It is obviously to the convenience of the poorer classes that such places should be located within convenient reach of their houses, and if properly regulated, the number of such places is of small moment.

For the new public necessaries the sites of existing ones are invariably selected in order to remove all just grounds of complaint, as the residents of the vicinity cannot object to a proper building being substituted for a filthy place of resort enclosed by mats only.

Municipal railway.

In last year's report, the Chairman stated that the municipal line of rail along Circular Road and to the Salt Water was almost completed. The line was constructed, as the justices are aware, for the purpose of enabling the sweepings of the town to be daily removed to a distance, as the practice of allowing small tanks, excavations, and holes of all sorts to be filled up in and around the town with street sweepings was obviously most objectionable.

The doubts expressed as to the working of the cranes for filling the wagons with sweepings were realized and platforms substituted, enabling the municipal carts to tilt their contents direct into the railway wagons.

The locomotives at first gave great trouble, and this for a few months prevented the line working with the regularity which must be maintained to secure efficient conservancy arrangements. However, in a few months, the locomotives were got into thorough working order, and, with increasing experience, the department overcame all minor difficulties, and the line of rail has been found of very great convenience, not only for the removal of sweepings, but also for the carriage of metal for the roads, and materials of all sorts for the different municipal works. Indeed, now the marvel is how the Municipality has, for so many years, managed without the line.

Negotiations were concluded for leasing out a portion of the line to the Eastern Bengal Railway Company.

Health Officers' department.

Dr. Macrae officiated as Health Officer during Dr. Tonnerre's absence for six months on medical certificate.

The chief duty of the nuisance department consisted in enforcing a due observance of existing sanitary regulations, and in pursuance of that object, 1,849 notices were served and 10,580 summonses issued for breaches of conservancy laws, which resulted in 5,708 convictions, for which the aggregate fines amounted to Rs. 12,312.

The want of disposition to conform to sanitary regulations is partly attributed to the reluctance of the authorities to enforce the full amount of penalties. With a

mere nominal fine, it is impossible to enforce cleanliness in those portions of the town inhabited by the lower classes of natives.

The supervision of articles of food and drink for sale also devolves on the nuisance department.

Public squares and tanks.

These were under charge of Mr. Bartlett, whose exertions in keeping them in a clean and proper state, and planting with flower beds, had been fairly successful.

The responsibility of having deprived the public of a portion of the finest square in the town, the Dalhousie Square, by building the Dalhousie Institute, rests entirely with the government, and the Justices strongly protested against such an exercise of power.

Markets and bazaars.

There had been marked improvement in the bazaars in the northern division of the town, which presented a clean and satisfactory state, and appear to have been well supplied for the requirements of the natives. It is a matter of regret that the same cannot be said of the bazaars of the southern division, especially that in Dhurrumtollal whence European residents chiefly derive their supplies.

A proposal was brought forward for establishing a European market at the expense of the Municipality, but the proposal was negatived by a large majority of justices in meeting.

Registration of births and deaths.

The town, for purposes of registration of births and deaths, was formerly divided into six districts, each in charge of a Registrar, usually a Medical Officer or general practitioner.

The death returns were considered tolerably accurate, the Health Officer being in a position to ascertain the actual number of corpses taken for cremation or interment.

The birth returns always appeared to be absurdly low; and it seemed impossible to compel the people to report births without organizing an expensive establishment. A special Committee recommended that the inspector of each police station should be appointed Registrar of births and deaths within his jurisdiction, as it was believed that police officers would be better able to compel registration of births than any other agency that could be adopted, besides a considerable reduction of expenditure would be at once effected. This arrangement took effect from the 1st April 1868.

The result shows that the registration of births last year was more efficient than in the previous year, as the number registered amounted to 5,642, being an increase of 804 over the preceding year; but it is difficult to believe that these figures represent the actual number of births during the year, as if so, the birth-rate would be only a little above one per cent. on the assumed population of the City, which can hardly be the case.

The total number of deaths has been 13,733, being an excess of 1,636 over the previous year. This excess is, probably, attributable to cholera, which was more prevalent than for many previous years, the deaths from that cause alone having been 4,186 against 2,270 in 1867. Assuming the population of the town at 430,000 souls, the death-rate has been 9·7 per 1,000 from cholera, and 22·2 exclusive of cholera, being equivalent to 31·9 per 1,000 from all causes. This, however, does not so unfavourably contrast with the other great cities of Europe, and even of Great Britain, where the rate of mortality ranges from 23·39 in London to 36·43 in Liverpool, as pointed out by Dr. Macrae.

Pauper hospital.

Dr. Woodford reported the Sealdah Market well adapted for a hospital, but that some additions and alterations were urgently needed; some of which were carried out at a cost of Rs. 19,511–13–2.

The following figures exhibit the admissions, discharges, deaths, and transfers during the past year:

Remained on the 31st December 1867 -	- 334	
Admitted during 1868 - - -	- 3,893	
	———	4,227
Discharged - - - -	- 2,724	
Died - - -	- 1,116	
Transferred to Lunatic Asylum -	- 102	
Remained on the 31st December -	- 285	
	———	4,227

The per-centage of deaths to patients treated, exclusive of persons arriving in a moribund state, was 26·685. The daily average of sick was 273.

	R.	A.	P.
Establishment - - -	11,950	9	6
Dieting - - -	17,654	6	0
Medicine - - - -	2,456	13	6
Clothing, &c. - - -	2,447	3	0
Contingencies - - -	5,104	8	9
Total - -	39,622	8	9

The total expenditure on account of current charges, exclusive of repairs to the building, amounted to Rs. 39,622-8-9 as noted in the margin. The average monthly cost of each patient is therefore about Rs. 12-1-0.

Income and expenditure.

A period of five and a half years had elapsed since the management of the municipal affairs of Calcutta had been vested in a Corporation of Justices. The total income for this period amounted to Rs. 1,42,22,101, the expenditure to *Rs. 137,31,686, leaving a balance of Rs. 490,416, which was devoted to works and purposes detailed in the budget estimate for the year. The above expenditure is exclusive of the Calcutta water supply works, for which Government agreed to advance the amount requisite on loan.

To meet the extraordinary expenditure loans have been raised to the extent of Rs. 49,99,600, and the balance has been provided from the surplus, available year by year, from the general municipal fund.

That the roads throughout the town are in far better repair, and the conservancy arrangements more efficient than they were six years ago, would be admitted by all.

New and important thoroughfares have been opened, especially that from Chitpore Road to Cornwallis Square, passing through the most densely populated and formerly most filthy part of the town. These improvements had been effected at great expense, and the urgent necessity is recognized of cutting new thoroughfares in the Northern Division, both as a sanitary measure and to meet increasing traffic. The providing new streets would be of little use, unless sanitary reforms are introduced in the numerous patches of land covered by huts which exist throughout the town, which are in the most filthy condition, and are surrounded with small tanks or excavations which have become stagnant pools of the most disgusting and offensive character, in which the inhabitants perform their daily ablutions, and it is feared sometimes use the water for drinking. Reports on this subject were brought before the justices for consideration. The Nuntollah waterworks had been carried out for the supply of the Northern Division with water.

Cemeteries.

Of the seven cemeteries which were in use within the town when the Justices took charge, all but two have been closed, and further burials prohibited, except in the occasional instance of the death of a person having a family vault in any of them.

The two cemeteries still in use are attached respectively to the Armenian and Greek churches. Their use has been continued under a special resolution of the Justices, as only a very small space still remains available for further burials, and when this is filled, the cemeteries will be completely closed.

Measures were also adopted by the justices to ensure the proper cremation of the corpses of persons belonging to the Hindoo caste, and now it may be confidently asserted, that no dead bodies are thrown into the river from Calcutta. The expenses attending the cremation of the deceased paupers are defrayed by the Justices. The Burning Ghauts themselves have also been considerably improved by the Justices from funds placed at their disposal by the Hindoo community.

Besides the works briefly alluded to above, the justices have introduced a system of public latrines for the use of the poorer classes, and in the construction of these places, as also of urinals, Rs. 1,67,846 have been expended.

Whilst reviewing the action of the corporation the chairman feels himself bound to draw attention to the growing tendency that has for the last few years been displayed by the Government of India to relieve the Imperial revenues by imposing fresh expenditure on the Municipality.

In support of this statement the action of the Government of India in regard to the transfer of the cost of the Calcutta police from the Government to the Corporation is noticed. The Government of India at first insisted on being relieved of the whole expenditure, and had it not been for the energetic and resolute action of the Justices, supported by the cordial assistance of the Government of Bengal, the inhabitants of Calcutta would have been burdened with the whole expense.

As it was, after a protracted correspondence, the Government of India consented to pay the whole cost of the river police and one-fourth of the expenses of the town

* Current expenditure, Rs. 76,94,108 ; extraordinary expenditure, Rs. 60,37,667.

police. This enabled the legislature to fix the maximum police rate at three per cent. on the assessed value of house property in lieu of at five per cent., as originally intended.

Again, the Government insisted on the cost of the Pauper Hospital being defrayed from municipal funds. This was successfully resisted for some time on the ground that such an expenditure could not be incurred under the provisions of Act VI. (B. C.) of 1863. As this position was confirmed by the opinion of the Advocate General, an Act was passed to meet the difficulty, and the justices have now to provide about Rs. 40,000 per annum for the current expenditure of the hospital, apart from extraordinary charges for repairs to buildings, &c., &c., which last year amounted to Rs. 19,286.

No sooner had the Justices taken over the Pauper Hospital than Act XXVI. of 1868 was passed, imposing the cost of Lock Hospitals, established under Act XIV. of 1868, on the Municipality, and now, by an arrangement with the Government of Bengal, half the current expenses of such institutions will be borne by Government and half by the town. This imposes on the corporation an additional annual expenditure of Rs. 36,000.

Small-pox Hospitals have also been constructed by Government and made over to the Justices, who are to pay the current expenses in case of an epidemic breaking out.

All these Hospitals are, no doubt, of great value to the poorer classes, and it is difficult to over-estimate the benefits which must accrue from the proposed Lock Hospitals and the general working of Act XIV. of 1868, but the drain on the municipal fund thereby caused is considerable.

Though it is expedient to allude to the prominent part taken by Government in imposing expenditure on the town, while not providing any additional sources of income from which it can be met, the assistance accorded to the Municipality by the Government of India, at the earnest request of the late Lieutenant-Governor, Sir Cecil Beadon, to enable the Water Supply Works to be undertaken at once, must be remembered and gratefully acknowledged.

The chairman records his thanks to Mr. W. P. Davis, the officiating Vice-chairman, and especially to the Secretary, Mr. R. Turnbull, and congratulates the Justices on the high price their municipal debentures command in the market.

(Signed) STUART HOGG,
Chairman of the Justices.

March 5, 1869.

ABSTRACT OF REPORT OF THE SANITARY COMMISSIONER FOR MADRAS, 1868.

MADRAS.

This Report, submitted by Surgeon-Major J. L. Rankin, Sanitary Commissioner for Madras, bears date 23rd June 1869. It was not received at the India Office until the 7th April 1870.

A cholera map is promised with the report for 1869.

The present Report is arranged in the form adopted the two previous years, being divided into the following parts:—

I. *Military*, including the sanitary condition of the army, European and Native.
II. *Civil*, including the health of the jail population, and of the civil community generally.
III. *Miscellaneous*, reviewing the principal questions bearing upon the sanitary administration of the Presidency during the year under report, whether military or civil.

Climate epidemics, &c.

The climate of the year under report did not present any exceptional character. Cholera was almost entirely absent from military cantonments, and prevailed less among the civil population than for many years past. Among European troops there were only seven cases and five deaths, four at Kamptee and one at Thayetmyoo. Native troops showed 40 cases and 18 deaths. Jails eight cases with four deaths, while amongst the civil population the deaths had been only 8,023 against 32,591 in 1867.

Small-pox.

Small-pox had been unusually prevalent among the civil population, causing 33,539 deaths against 27,284 in 1867. The troops escaped with few cases.

	Cases.	Deaths.
European troops - - -	15	1
Native „ - - -	58	–

The health of the general population was considered satisfactory, for although the deaths in the aggregate amongst the civil community, exceeded those during 1867 by 18,976, the increase was said to be due rather to the better working of the mortuary department, than to the unhealthiness of seasons.

PART I.

MILITARY.

Section I.—Her Majesty's British Troops.

The tables illustrating the health status of Her Majesty's British troops have been supplied by Mr. Hadaway, Inspector-General of Hospitals, Her Majesty's British Service. The average annual strength is returned at 10,158, the admissions to hospital 14,216, the constantly sick 634, the deaths in hospital 176, and out of hospital 34, total 210, and the invalided 634.

These figures give the following per mille ratios contrasted with 1867:—

Years.	Ratios per Mille of Strength.			
	Admitted.	Constantly Sick.	Died.	Invalided.
1867 - -	1386·8	61·8	19·9	54·6
1868 - -	1399·48	62·4	20·66	62·41

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In every element, therefore, there is a slight increase. The ratios are, however as a series, moderate, and the health of the troops may be pronounced to be good.

The health of the European army as elucidated by the *Medical stational* return has not been quite so good as during 1867, as is here shown :—

—	Ratios per Mille of Strength.		
	Admitted.	Constantly Sick.	Died.
1867 -	1358·2	60·45	18·11
1868 - -	1388·3	62·54	19·32

There is a slight increase in all the elements. The admission rate is 30·1, the constantly sick rate 2·09, and the death rate 1·21 per mille higher.

The actual number of admissions into hospital at the different *stations* of the army are 13,792, of which number 192 died, 162 in and 30 out of hospital.

The different *divisions* of the army, including depôts, give the following results in order of mortality :—

—	Strength.	Admitted.	Died.		Ratios per Mille.	
			In.	Out.	Admitted.	Died.
Hyberabad Force -	2,166	2,951	59	3	1362·4	28·5
Malabar and Canara -	828	1,017	13	5	1228·2	21·74
Centre Division - -	1,305	2,227	21	5	1706·5	19·92
Nagpore Force - -	987	1,603	16	2	1624·1	18·23
Pegu Division - -	1,625	2,503	18	7	1540·3	15·38
Mysore Division - -	1,654	1,904	20	5	1151·1	15·12
Ceded Districts - -	618	688	8	2	1113·2	16·1
Southern Division -	467	683	3	1	1462·5	8·56

At the different *stations* the figures stand thus :—

—	Ratios per Mille.		
	Average Daily Sick.	Admitted.	Died.
Malliapooram - -	45·1	963·4	36·4
Secunderabad - -	62·6	1362·4	28·5
Tonghoo - - -	58·2	1241·4	27·7
Port Blair - - -	54·05	1306·3	27·01
Calicut - - -	40·9	933·3	26·6
Seetabuldee - - -	41·3	1608·7	21·7
Cannanore - - -	47·5	1293·5	19·3
Kamptee - - -	58·9	1675·2	17·9
Bellary - - -	52·5	1121·5	17·0
St. Thomas' Mount - -	71·9	1428·5	16·35
Fort St. George - -	94·9	1890·6	15·7
Bangalore - - -	58·2	1151·1	15·12
Thyetmyoo - - -	62·2	1606·2	14·6
Palaveram - - -	17·6	372·5	9·8
Rangoon - - -	70·4	1668·07	8·4
Trichinopoly - - -	73·6	1422·7	4·5
Poonamallee - - -	146·2	2662·1	55·0
Chindwarrah - - -	59·8	745·1	19·6
Wellington - - -	74·4	1497·9	12·14
Ramandroog - - -	31·4	970·5	—

The following table shows the relative salubrity of stations during the year under report contrasted with the average of five previous years.

	Mortality in Ratios per Mille.	
	Average of previous Five Years.	1868.
Fort St. George - - -	19·96	15·7
St. Thomas' Mount - -	20·6	16·36
Bangalore - - - -	12·68	15·12
Cannanore - - - -	13·85	19·3
Calicut - - - -	14·28	26·6
Malliapooram - - - -	18·05	36·4
Trichinopoly - - - -	17·61	4·5
Bellary - - - -	17·8	17·0
Secunderabad - - - -	23·23	28·5
Kamptee - - - -	17·86	17·9
Rangoon - - - -	18·71	8·4
Tonghoo - - - -	18·11	27·7
Thayetmyoo - - - -	27·67	14·6
Port Blair - - - -	12·86	27·01

At the stations of Secunderabad, Bangalore, Cannanore, Calicut, Malliapooram, Tonghoo, and Port Blair, the mortality for the year exceeds, in some instances considerably, the average of the previous five years. At Fort St. George, St. Thomas' Mount, Trichinopoly, Rangoon, and Thayetmyoo, it is below the average, and at Bellary and Kamptee at precisely the same ratio.

The following table exhibits in ratios per millo of average strength, the prevalence of and mortality by the several diseases for which statistics are desired by the Right Honourable the Secretary of State. The results are taken from the stational returns.

1868.	Sickness.	Mortality.		Total.	Invaliding.
		In Hospital.	Out of Hospital.		
Average Stregth 9,934.					
Fevers - - -	185·2	1·51	Specific diseases from which *out of hospital* mortality occurs are not given in the weekly medical returns from stations.		1·08
Dysentery - -	79·6	1·81			7·67
Diarrhœa - -	73·7	0·20			1·28
Hepatitis - -	73·8	5·33			10·2
Cholera - - -	0·7	0·50			—
All diseases - -	1388·3	16·30	3·02	19·32	62·41

The following table shows the per mille ratios of constantly sick, deaths in hospital, and deaths to sick treated, for 11 years, including the year under report :—

Years.	Strength.	Ratio per Mille of Strength.		
		Constantly Sick.	Deaths in Hospital.	Deaths to Sick treated.
1858 - -	10,593	81·38	44·56	23·84
1859 - -	12,627	67·87	11·8	15·45
1860 - -	11,199	63·39	17·76	11·76
1861 - -	10,918	56·69	12·82	9·9
1862 - -	12,531	62·08	16·91	12·62
1863 - -	12,621	55·70	16·95	12·87
1864 - -	12,993	65·49	18·09	12·36
1865 - -	13,059	62·71	21·21	14·0
1866 - -	11,378	69·1	22·2	14·3
1867 - -	10,793	61·8	17·4	14·4
1868 - -	10,158	62·4	17·3	14·2

The figures for the year contrast on the whole favourably with the four years immediately preceding. The *in*-hospital death rates for 1859, 1861, 1862, and 1863

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are the lowest of the series. The average *in*-hospital death rate for the *decade* ending 1867 is 19·97, so that the death rate for the year under report is 2·65 below the average.

Relative prevalence of sickness and mortality in the different arms of the service.

The health of the different arms of the service, Artillery, Cavalry, and Infantry, is illustrated by the following table :—

	Artillery.	Cavalry.	Infantry.
Average strength	2,665	876	6,617
Admissions	3,994	898	9,324
Deaths { In hospital	46	19	111
Deaths { Out of hospital	8	1	25
Daily sick	177	43	414
Invalided	142	58	434
Ratio per 1,000 of strength.			
Admissions	1498·6	1025·1	1409·0
Deaths { In hospital	17·2	21·6	16·7
Deaths { Out of hospital	3·0	1·1	3·7
Daily sick	66·4	49·0	62·5
Invalided	53·4	67·3	65·6

The admission rate is highest in the Artillery, the death rate highest in the Cavalry.

The following table gives a comparison with seven years :—

Years.	Artillery.		Cavalry.		Infantry.	
	A.	D.	A.	D.	A.	D.
1861	1790·7	24·79	1426·1	26·15	1201·0	13·72
1862	1452·0	22·86	1081·0	17·42	1204·0	20·60
1863	1751·2	23·27	1078·1	22·83	1153·0	23·37
1864	1924·3	28·47	1208·0	15·74	1503·0	23·47
1865	1597·1	25·06	1511·5	20·43	1428·3	26·58
1866	1524·3	35·07	1535·1	21·26	1446·9	23·41
1867	1471·8	17·4	1210·0	21·8	1378·3	20·5
Mean	1644·5	25·27	1292·8	20·80	1330·6	21·66
1868	1498·6	20·2	1025·1	22·7	1409·0	20·4

Relative prevalence of the more important diseases.

The relative prevalence of and mortality by some of the more important diseases during the year are shown in the following table :—

Diseases.	Artillery.		Cavalry.		Infantry.	
	Ratio per 1,000 of Strength.					
	A.	D.	A.	D.	A.	D.
Dysentery	70·4	1·0	83·3	2·2	87·4	2·3
Diarrhœa	74·2	—	98·1	—	76·9	0·3
Cholera	1·5	1·1	—	—	1·2	0·9
Fevers	233·2	1·0	133·4	1·1	181·8	1·4
All miasmatic diseases	500·9	3·7	407·5	3·4	463·5	5·2
Enthetic „	253·6	0·3	146·1	—	292·5	—
All zymotic „	846·9	4·1	586·7	3·4	817·4	5·4
Hepatitis	76·4	5·9	83·2	15·9	76·7	4·9
Insolatio	1·1	0·7	3·4	1·1	4·0	1·6
All accidents	166·2	3·0	101·5	1·1	119·3	3·4

In last year's report the small amount of dysentery in the Cavalry was noticed The ratio for the year under review is 51·0 above that of 1867. *Cholera* spared the Cavalry entirely, and in fact appeared only at one station, Kamptee, where it

invaliding for 1867.

Of these 634 men, 537 are for "discharge" and 97 for "change of climate," and are distributed amongst the different arms of the service as follows: Artillery 142, Cavalry 58, Infantry 434.

These figures give the following per mille ratio upon the mean strength of each arm: Artillery 53·3, Cavalry 66·2, Infantry 65·5.

The mean per mille rate of invaliding for this Presidency, for the four years ending 1864, is given at 42·69. In 1865 it was 38·90, in 1866 44·28, in 1867 it was 54·6, and for the year under report it is 62·41, bearing out the remark made in last year's report that this source of decrement to the strength of Her Majesty's British troops in India is on the increase owing to the facilities now afforded for giving change of climate to England.

The following tables show a comparison with the previous year regarding mortality, with reference to age and residence in India:—

Mortality, according to age and residence.

Years.	Under 20 Years.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 and upwards.
Mean of four years - -	6·41	15·98	24·39	30·45	39·39	53·37
1867 - - -	13·9	9·7	16·0	32·1	38·9	53·4
1868 - - -	8·6	8·8	19·7	29·8	32·1	40·2

	Per Mille of Strength.	
	1867.	1868.
Deaths under 1 year of residence - -	19·3	19·2
From 1 to 2 years „ - -	13·2	16·0
„ 2 to 3 „ „ - -	15·0	16·6
„ 3 to 4 „ „ - -	19·1	18·2
„ 4 to 5 „ „ - -	44·7	24·0
„ 5 to 6 „ „ - -	11·7	2·8
„ 6 to 7 „ „ - -	8·6	5·5
above 7 „ „ - -	17·6	19·1

Return showing the Admissions and Deaths among Officers, Women, and Children of Her Majesty's British Troops serving in the Madras Presidency during the year 1868.

Officers.—Strength, 428.

—	Small-pox.	Measles.	Tonsilitis.	Ophthalmia.	Influenza.	Furunculus.	Dysentery Acuta.	Diarrhœa.	Febris Intermittens.	Febris Remittens.	Febris Typhoid.	Febris Continua.	Rheumatism.	Venereal Diseases.	Ebriositas.	Anasarca.	Phthisis.	Delirium Tremens.	Bronchitis.	Dyspepsia.	Hepatitis Acuta.	Hepatitis Chronica.	Asthenia.	Skin Disease.	Accidents.	Other Disease.	Total.
Admitted -	3	2	8	8	2	10	8	33	80	9	1	13	15	27	3	1	1	1	13	46	7	18	6	43	53	89	500
Died - -	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	1	—	—	—	—	—	1	—	—	2	2	8

Ratio per 1,000 of Strength.

Admitted -	7·00	4·67	18·69	18·69	4·67	2·336	18·6	77·1	186·9	21·03	2·3	30·3	35·06	63·08	7·0	2·3	2·3	2·3	30·3	107·4	16·3	42·0	14·0	100·4	123·8	207·9	1168·2
Died - -	—	—	—	2·3	—	—	—	—	—	—	2·3	—	—	—	—	2·3	—	—	—	—	—	2·3	—	—	4·6	4·6	18·6

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WOMEN.—Strength, 1,294.

—	Small-pox.	Measles.	Tonsillitis.	Ophthalmia.	Dysentery.	Diarrhœa.	Febris Intermittens.	Febris Remittens.	Febris Continua.	Cholera.	Asthenia and Anæmia.	Phthisis.	Hysteria.	Hepatitis Acuta.	Hepatitis Chronica.	Prolapsus Uteri.	Paramenia.	Partusabortus.	Parturitio.	Menorrhagia.	Leuccorrhœa.	Dismenorrhœa.	Skin Disease.	Accidents.	Other Disease.	Total.
Admitted -	2	5	14	57	47	61	116	18	23	1	94	10	10	6	7	3	8	291	23	2	3	1	29	9	269	1,109
Died - -	—	—	—	—	3	1	—	—	1	1	—	2	—	1	—	—	1	2	—	—	—	—	—	—	2	14

Ratio per 1,000 of Strength.

Admitted -	1·54	3·8	10·8	44·04	36·3	47·1	89·6	13·9	17·7	0·7	72·6	7·7	7·7	4·6	5·3	2·3	6·1	224·8	17·7	1·5	2·31	0·7	22·4	6·9	207·8	856·03
Died - -	—	—	—	—	2·3	0·7	—	—	0·7	0·7	—	1·5	—	0·7	—	—	0·7	1·5	—	—	—	—	—	—	1·5	10·8

CHILDREN.—Strength, 2,070.

—	Small-pox.	Measles.	Tonsilitis.	Influenza.	Ophthalmia.	Pertussis.	Cholera.	Cynanche Trachealis.	Dysentery.	Diarrhœa.	Febris Intermittens.	Febris Remittens.	Febris Continua.	Vermes.	Scabies.	Anæmia and Asthenia.	Convulsion.	Hydrocephalus.	Natus Mortus.	Premature Birth.	Dentitio.	Atrophia.	Skin Disease.	Accidents.	Other Disease.	Total.
Admitted -	1	213	7	6	257	45	1	4	61	160	29	42	42	8	10	75	19	8	1	1	106	10	37	22	200	1,435
Died - -	—	—	—	—	—	6	1	3	10	17	—	9	1	—	—	7	11	5	1	1	12	2	1	1	18	112

Ratio per 1,000 of Strength.

Admitted -	0·48	102·89	3·3	2·8	124·1	21·7	0·4	1·9	29·4	77·2	47·8	20·2	20·2	3·8	4·8	36·2	9·1	3·8	0·4	0·4	51·2	4·8	17·8	10·6	96·6	693·2
Died - -	—	2·89	—	—	—	2·8	0·4	1·4	4·8	8·2	—	0·4	4·3	—	—	3·3	5·3	2·4	0·4	0·4	5·8	0·9	0·4	0·4	8·7	54·1

The vast improvements that have in recent years been made in the accommodation for women and children of our European soldiery, have tended to a large reduction in the rate of mortality, and there is no subject which the Government can contemplate with greater complacency than the change thus wrought in the moral and physical welfare of the families of the troops.

Section II.—Stational Returns.

Table showing Sickness and Mortality among the European Troops at each Station of the Madras Presidency, in which they have been cantoned during the Year 1868, arranged according to their mean Average Annual Strength.

Stations.	Mean Strength.	Admissions.	Daily Sick.	Deaths in Hospital.	Deaths out of Hospital.
Secunderabad	2,166	2,951	135·7	59	3
Bangalore	1,654	1,904	96·3	20	5
Kamptee	890	1,491	52·5	14	2
Rangoon	711	1,186	50·1	4	2
Cannanore	671	868	31·9	9	4
Fort St. George	631	1,193	59·9	8	2
Bellary	584	655	30·7	8	2
Thayetmyo	480	771	29·9	6	1
St. Thomas' Mount	427	610	30.7	6	1
Tonghoo	323	401	18·8	6	3
Wellington	247	370	18·4	2	1
Trichinopoly	220	313	16·2	1	—
Poonamallee	145	386	21·2	7	1
Port Blair	111	145	6·4	2	1
Palaveram*	102	38	1·8	—	1
Malliapooram	82	79	3·7	2	1
Calicut	75	70	3·07	2	—
Chindwarrah†	51	38	3·05	1	—
Seetabuldee	46	74	1·9	1	—
Ramandroog	34	33	1·07	—	—
European Veterans.					
Palaveram	207	151	4·8	3	—
Vizagapatam	77	65	3·2	1	—
Total	9,934	13,792	621·29	162	30

* For 25 weeks only. † For 23 weeks only.

Table showing the Number of Admissions and Deaths under different Classes of Diseases at each Station during 1868.

Stations.	Zymotic.		Constitutional.		Local.		Developmental.		Violence.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad	1,757	16	48	2	879	38	8	—	259	3
Bangalore	1,022	8	26	2	584	10	14	—	252	—
Kamptee	951	5	9	1	404	7	16	—	110	1
Rangoon	661	1	9	1	343	2	63	—	110	—
Cannanore	402	3	15	—	319	5	10	—	121	1
Fort St. George	683	2	9	—	370	6	45	—	73	—
Bellary	380	1	7	—	175	6	6	1	87	—
Thayetmyo	425	3	18	—	250	2	6	—	71	1
St. Thomas' Mount	395	1	11	1	155	3	4	—	45	1
Tonghoo	190	1	5	1	144	2	4	—	58	2
Wellington	185	—	4	—	138	2	16	—	27	—
Trichinopoly	172	—	2	—	86	—	7	—	45	1
Poonamallee	207	1	16	1	129	2	18	—	16	3
Port Blair	88	—	1	—	29	2	—	—	27	—
Palaveram*	26	—	—	—	4	—	—	—	8	—
Malliapooram	32	1	2	—	33	1	1	—	11	—
Calicut	30	—	5	—	27	1	—	—	7	1
Chindwarrah†	26	1	—	—	12	—	—	—	—	—
Seetabuldee	55	—	2	—	9	1	—	—	8	—
Ramandroog	23	—	—	—	8	—	—	—	2	—
European Veterans.										
Palaveram	54	1	3	—	72	1	1	1	21	—
Vizagapatam	33	—	2	—	21	1	4	—	5	—
Total	7,797	45	194	9	4,191	92	223	2	1,363	14

* For 25 weeks only. † For 23 weeks only.

MADRAS. A comparison with the preceding year (1867) gives the following results:

	Strength.	Rates per Mille.		Died.
		Admitted.	Constantly Sick.	
1867 - - -	10,928	1538·2	60·45	18·11
1868 - - -	9,934	1388·3	64·45	19·32
Difference - -	994	+ 30·1	+ 4·09	+ 1·21

Measures were taken for procuring an annual Sanitary Report from each cantonment and station, to be forwarded to the office of the Sanitary Commissioner for Madras; and a statement of the progress made in "new works and measures of Sanitary improvement" is promised with the Commissioner's Report for 1869.

Madras.—Fort St. George.

The ratios for the past three years given in the margin are high as a series, and contrast unfavourably with those of other stations. The largest mortality was amongst the "details" of Her Majesty's Infantry, who lost in the proportion of 63·8 per mille. The Royal Artillery had no loss by death. Not a single case of cholera occurred. Of the eight deaths in hospital one was from continued fever, one from delirium tremens, two from hepatic disease, and three from diseases of respiratory organs.

	Admissions.	Deaths.	Constantly sick.
1866 -	1957·8	16·0	97·2
1867 -	1971·9	23·3	94·1
1868 -	1890·6	15·7	94·4
Means -	1940·1	18·33	95·2

Sanitary conditions bearing upon the health of the troops.

The drainage of the native town, with which is associated the nuisance from the sewer to the N.E. of the fort, was still under consideration. The fort ditches continued in a most insanitary condition.

The subject of the better conservancy of the fort had been specially reported on, with the recommendation of the general introduction of the *dry-earth* system. The Government of India took exception to the additional expenditure, and recommended the substitution of MacDougall's disinfecting powder for dry earth. The question was still in abeyance.

The Sanitary Commissioner also attaches great importance to the erection of a third story to the Infantry barracks, as a means of reducing the high sick rate prevailing in Fort St. George. An admission rate of 1,940 per mille (the mean of the years 1866, 1867, 1868) points to the existence of remedial causes of disease, viz., occupation of lower floor of barracks as dormitories, the insanitary condition of the great drain outside the fort, of the foul ditches and drains within the fort, and want of a more efficient system of conservancy.

Comparison with other stations.

Fort St. George stands last on a list of 16 stations as regards admission rate, last in "constantly sick" rate, and sixth in death rate. In 1867 it held the 14th place amongst the same 16 stations in its admission rate, the last as regards "constantly sick," and the last but one in death rate. It has *lost*, therefore, in 1868 two places in its admission rate, retains the same position in the "constantly sick rate," but has *gained* nine places in the table of death rates.

Control of venereal disease.

The Indian Contagious Diseases Act was introduced into Madras on the 15th October 1868. The Lock Hospital was opened on the same date, and the demand for accommodation was so great that another building had to be found and is now in occupation. A further extension of accommodation is however necessary, and it has been proposed to provide a large central hospital for the accommodation of 250 native women.

A committee was sitting to select a site and to submit a plan of hospital. Since the opening of the Lock Hospital, 528 women had been under treatment, and the number of public women registered under the Act stood on the 31st March 1868 at 779, of which number 5 were Europeans, 41 East Indians, and 779 Natives.

The good effects of the introduction of the Act had not had time to manifest themselves. Enthetic diseases prevailed amongst the European troops to the extent of 435·8 per mille of strength or one case of disease to every 2·29 men. During 1867 the ratio was 412·7 per mille. The figures in the margin show the ratios for three years, 1866, 1867, and 1868. A material reduction during 1869 upon the figures representing the mean ratio for the past three years might be anticipated if the provisions of the Act could reach all women cohabiting with the soldiers, many of whom at present manage to escape registration.

1866 -	562·2
1867 -	412·7
1868 -	435·8
Mean -	470·2

Health of the civil population.

The remarkable immunity from cholera reported last year in relation to the year 1867, has continued through 1868. The public health suffered much, however, from a severe epidemic of small-pox, which attained its maximum of intensity in the week ending 10th April; 799 deaths are recorded during the year, or 425·5 in excess of the average of the eight previous years. By cholera only 13 deaths were registered, or 1960·9 less than the average of eight previous years. It may be noted here that the deaths altogether are 449 below the average of the preceding eight years. The health then of the civil community had been good.

Hospital for Her Majesty's British troops.

No decision had been arrived at as to the site upon which the new hospital was to be built.

Progress made by the municipality in sanitary works.

Water Supply.—The scheme of water supply finally adopted by the Municipality and approved by the Government, is to bring water from the Red Hills lake by an open channel to some central spot, at as high a level as possible, and then to conduct it under pressure to fountains, where the levels will admit, and in those localities which are so high that the water cannot rise to the surface, to store it into dip wells. It was found quite beyond the means of the municipality to adopt a system of supply under high pressure. The gathering grounds of the supply, which finally is impounded in the Red Hills lake, are, writes Mr. Fraser, C.E., "The Nageri Hills, "which are almost wholly composed of gneiss, and the channels through which it "flows consist nearly altogether of pure silicious sand." The water passes first through the Cholaveram tank, where it is expected that the grosser particles held in suspension by the water will be deposited, while the finer particles will subside in the Red Hills lake, and a comparatively pure water be delivered by the delivery channel.

This scheme, after much deliberation, was sanctioned by Government; but the Sanitary Commissioner objects to the proposal to sink dip wells in the already sewage-polluted subsoil of the town of Madras, and thinks it will be impossible to preserve water flowing through a long line of open channels from deterioration and pollution, which the system of partial filtration proposed would in no way remove.

Drainage.

The drainage project proposed by Captain Tulloch, R.E., was still in abeyance. The condition of the drains at Black Town and of the suburbs was something indescribable. The condition of the Cooum river, now the *cloaca maxima* of the city, is not much better. It is at certain seasons of the year, during the hot and dry weather, a simple cesspit, the water being sewage, but little diluted. Some measures must, sooner or later, be taken to improve the condition of this river. There has been no escape for its polluted waters for the two last years. Owing to the scarcity of rain the river has never risen high enough to necessitate the opening of the bar, a process which by establishing a scour, removes much of the silt and sewage deposits. At the time of report there was but a small thread of water, or rather sewage, in some parts of the river. In other parts the whole river bed is laid dry, and the main sewers are seen discharging their fœtid contents upon the shores. The stench emitted from these localities is most sickening. Numerous projects and proposals have been put forward for the cleansing of this river. The most feasible, but doubtless a very costly method of dealing with it, would be to reclaim much of the foreshore on either bank and reduce the width of the water way, at the same time deepening the bed.

The following table shows the mortality of the year, compared with previous years:—

MADRAS.

TABLE showing the MORTALITY in MADRAS during nine years ending 1867.

Years.	Small-pox.	Fevers.	Dysentery.	Diarrhœa.	Cholera.	Other Miasmatic Diseases.	Total Miasmatic Diseases.	Other [illegible]	[illegible]
1860 - -	245	2,459	1,326	1,012	2,580	213	7,835	5,663	13,498
1861 - -	655	2,169	1,353	981	2,776	169	8,103	5,267	13,370
1862 - -	1,033	2,235	1,171	1,032	3,635	154	9,260	5,471	14,731
1863 - -	112	2,117	1,240	914	1,684	228	6,295	5,563	11,858
1864 - -	173	2,083	1,103	893	574	193	5,019	5,390	10,409
1865 - -	44	2,190	1,159	1,062	944	153	5,552	5,664	11,216
1866 - -	103	2,256	1,318	947	2,984	128	7,736	6,145	13,881
1867 - -	623	2,456	1,420	846	614	167	6,125	6,120	12,245
Total - -	2,988	17,965	10,090	7,687	15,791	1,405	55,925	45,283	101,208
Average -	373·5	2245·6	1261·1	960·8	1973·9	175·6	6990·6	5660·3	12,651
1868 - -	799	2,232	1,019	812	13	425	5,300	6,902	12,202
Increase -	425·5	—	—	—	—	249·4	—	1241·7	—
Decrease -	—	13·6	242·1	148·8	1960·9	—	1690·6	—	449

TABLE showing the RATE per 1,000 of the SICKNESS, MORTALITY, and INVALIDING of EUROPEAN and NATIVE TROOPS and PRISONERS in JAIL (Madras Penitentiary).

Years.	Sickness.	Mortality. In Hospital.	Mortality. Out of Hospital.	Mortality. Total.	Invaliding (Inspector-General's Return.)
EUROPEAN TROOPS. Average strength, 631.					
Fevers - - -	202·82	1·6	The specific diseases by which out of hospital deaths take place are not given in the medical stational returns.		—
Dysentery - -	45·9	—			3·17
Diarrhœa - - -	90·3	—			—
Hepatitis - - -	128·4	3·2			1·50
Cholera - - -	—	—			—
All diseases - -	1890·6	12·6	3·1	15·7	39·62
NATIVE TROOPS. Average strength, 2,065.					
Fevers - - -	135·2	—			No information regarding invaliding native troops is available.
Dysentery - - -	13·5	—			
Diarrhœa - - -	7·2	0·4			
Hepatitis - - -	1·4	—			
Cholera - - -	0·96	—			
All diseases - -	556·9	5·3	—	5·3	—
NATIVE PRISONERS. Average strength, 501.					
Fevers - - -	176·6	1·9			
Dysentery - - -	89·8	3·9			
Diarrhœa - - -	77·8	3·9			
Hepatitis - - -	—	—			
Cholera - - -	—	—			
All diseases - -	890·2	21·9	—	21·9	—

ST. THOMAS MOUNT.

	Admissions.	Daily sick.	Died.
1866 -	1538·6	72·8	26·40
1867 -	1358·0	63·9	14·80
1868 -	1428·5	71·9	16·35
Mean -	1441·7	69·5	19·18

The figures representing admissions and constantly sick contrast very favourably with those at Madras (Fort St. George). The female hospital was approaching completion; it was of two stories, and promised to be convenient, roomy, and airy.

MADRAS.

Great improvements had been made in the sanitary condition and accommodation of the troops; they had now the 600 superficial feet per bed allowed by regulation in barracks, and 1,200 in hospitals.

No epidemic disease visited the station during the year, and cholera was entirely absent. The conservancy of the station was very carefully attended to, and so far as the troops, European and Native, were concerned, the system was most efficient. The erection of public latrines was an urgent want.

The civil population within military limits was estimated at 12,562. Registration of deaths was not effectively carried out.

The rules for regulation of lock hospitals was introduced in September 1868. The hospital itself had been long existent, but the rules had too recently come into operation to allow judgment on their sufficiency. Lock hospitals, &c.

The number of registered prostitutes is 43, of whom 13 are on an average under treatment.

The actual number of admissions by enthetic disease amongst the troops is 150, or in the proportion of 351·3 per 1,000 of strength, a very high ratio, but 24 per mille less than that of last year.

The rainfall had been much below the average, the wells had not been so low for many years past.

TABLE showing the RATE per 1,000 of SICKNESS, MORTALITY, and INVALIDING amongst EUROPEAN and NATIVE TROOPS.

Year 1868.	Sickness.	Mortality.			Invaliding.
		In Hospital.	Out of Hospital.	Total.	
EUROPEAN TROOPS. Average strength, 427.					
Fevers	234·1	2·3	The specific diseases by which out of hospital deaths take place are not given in the medical stational returns.		—
Dysentery	39·8	—			2·24
Diarrhœa	49·2	—			2·34
Hepatitis	70·2	4·7			4·68
Cholera	—	—	—	—	—
All diseases	1428·5	14·05	2·3	16·35	51·5
NATIVE TROOPS. Average strength, 183.					
Fevers	153·0	—	The specific diseases by which out of hospital deaths take place are not given in the medical stational returns.		
Dysentery	32·7	—			
Diarrhœa	10·9	—			
Hepatitis	5·4	—			
Cholera	—	—	—	—	Not known.
All diseases	551·9	5·4	—	5·4	

POONAMALLEE.

This depôt is shortly to be abandoned, and a site has been approved of at Ennore, and plans of two-storied buildings in conformity with the standard plans have been called for. The new site is considered likely to prove good and healthy.

PALAVERAM.

The sanitary report of this small station notices the want of latrines for native troops and the civil population. The public health had been good.

TRICHINOPOLY.

The low death rate for the last two years is gratifying.

MADRAS.

Years.	Ratios per mille. Admissions.	Constantly sick.	Died.
1866	1468·1	49·5	22·7
1867	1444·5	78·0	4·7
1868	1422·7	73·6	4·5
Means	1445·1	67·0	10·6

Since the establishment of the Municipal Commission very considerable improvements have been made in the sanitary condition of the cantonment and town of Trinchinoply and its outlying hamlets. The cantonment is now one of the best kept in the Presidency. The roads were in thorough repair, the streets lighted, and general conservancy maintained under a liberal establishment.

The annual feast at Sreerungum, which attracts an immense concourse of pilgrims, passed off without any attack of epidemic cholera.

Within the year under review the arsenal has been removed from within the fort of Trichinopoly to the cantonment. Among the warrant officers' families who formerly lived within the Fort there was always much sickness.

TABLE showing the RATE per 1,000 of SICKNESS, MORTALITY, and INVALIDING of EUROPEAN and NATIVE TROOPS, and PRISONERS in GAOL.

Year 1868.	Sickness.	Mortality. In Hospital.	Mortality. Out of hospital.	Mortality. Total.	Invaliding.
EUROPEAN TROOPS. Average strength, 220.					
Fevers	195·4	—	The specific disease by which out-of-hospital deaths take place are not given in the medical stational returns.		—
Dysentery	31·9	—			—
Diarrhœa	45·4	—			45·4
Hepatitis	54·5	—			—
Cholera	—	—	—	—	—
All diseases	1422·7	4·5	—	4·5	45·4
NATIVE TROOPS. Average strength, 1,221.					
Fevers	54·0	—	The specific diseases by which out-of-hospital deaths take place are not given in the medical stational returns.		—
Dysentery	0·8	—			—
Diarrhœa	10·6	0·8			—
Hepatitis	0·8	—			—
Cholera	4·9	4·9	—	—	—
All diseases	261·2	9·8	0·8	10·6	—
PRISONERS. Average strength, 442. (Central Jail.)					
Fevers	29·4	—	The specific diseases by which out-of-hospital deaths take place are not given in the medical returns.		—
Dysentery	15·8	—			—
Diarrhœa	40·7	13·5			—
Hepatitis	—	—			—
Cholera	—	—	—	—	—
All diseases	278·2	18·0	—	18·0	—

WELLINGTON.

(Depôt and Hill Sanitarium.)

The ratios (admissions 1,497·9, constantly sick 74·4, deaths 12·14 per mille) are, as a series, low, considering that the strength is made up of sick and delicate soldiers.

Prevailing diseases.

The 370 admissions into hospital (and which represent the nature of the cases sent to the depôt) comprise 61 of paroxysmal fevers, 13 of diarrhœa, nine of dysentery, 62 of venereal affections, 13 of diseases of nervous system, 21 of affections of the respiratory organs, 27 of hepatic disease, two sunstroke and heat apoplexy, 25 violence and accident, and 135 "all other diseases." Of the two deaths, one occurred from hepatitis; the other is not specified.

Complaints are made by the medical staff of the want of judgment evinced by regimental medical officers in selection of cases for this depôt.

It is advanced that cases of secondary venereal disease, chronic rheumatism, and of organic visceral disease, as hepatitis and dysentery, and of fevers complicated with visceral congestions and enlargements, form a large bulk of the cases transmitted, cases which it is well known are not suited to the climate of these hills, and consequently that many have to be returned to the plains after a few weeks residence, worse than when they were sent up. The list of disease given in the foregoing paragraph bears out the statement, but the proportion of deaths, which is 12·14 per mille upon strength and 1·4 upon admissions, sufficiently shows that the *mass* of cases have derived benefit by the climate, the tendency to death having been largely averted. The death rate, notwithstanding that the strength is entirely made up of sick men, a large proportion sent from the plains after a more or less prolonged course of treatment in regimental hospitals, is lower than at any station on the plains except Trichinopoly and Palaveram, at which stations the numbers are too small to admit of any reliable deductions, and it is logical to predicate that had the 370 sick men treated during the year at this depôt been retained on the plains a very much larger number of deaths would have occurred. Doubtless a more judicious selection of cases transmitted will lead to a still lower death rate, but the results notwithstanding prove the benefit derived by the sick by the climate of this depôt.

Cases for transmission to the sanitarium injudiciously selected.

There is an objection on the part of commanding officers to weaken their commands on the plains by sending away men other than those actually sick. The prevention of inefficiency by disease is not sufficiently taken into consideration. The accommodation provided in the new buildings at this depôt had not hitherto been half utilized. The barracks are capable of containing 544 men, or 297 more than the average of the past year.

The sanitary condition is reported as generally good, but there had been extensive prevalence of measles among the families of the troops.

Bangalore.

The mean annual strength of H.M. British troops at Bangalore had been 1,654, and the ratios per mille of strength are, admissions 1151·1, constantly sick 58·2, and deaths 15·12;—12·1 in, and 3·02 out of, hospital. The sick admission rate is considerably in excess of that for 1867, when it reached only 751·1 per mille; the daily sick rate is nearly twice as large; the mortality is 5·5 per mille higher.

This increase in the prevalent sickness and mortality at this highly favored station is serious, and it is necessary to trace to what arm of the service it is attributable.

The constitution of the force, witha comparison with the previous year, is given in the following table.

Regiments.	Years.	Strength.	Admissions.	Constantly Sick.	Died.	Ratios per 1,000 of Strength.		
						Admitted.	Constantly Sick.	Died.
Artillery	1867	393	463	15·4	3	1178·1	39·2	7·6
	1868	495	521	21·9	6	1052·5	44·2	12·1
			Increase or decrease			−125·6	+5·0	+4·5
Cavalry	1867	477	312	15·5	8	654·0	32·4	16·7
	1868	451	341	17·1	3	756·1	37·9	6·6
			Increase or decrease			+102·1	+5·5	−10·1
Infantry	1867	849	496	22·3	6	584·2	26·3	7·0
	1868	1,553	967	104·3	16	622·6	67·1	10·3
			Increase or decrease			+38·4	+40·8	+3·3
Details British Troops	1867	28	26	3·2	—	928·6	114·3	—
	1868	41	75	7·3	—	1829·2	178·0	—
			Increase or decrease			+900·6	+63·7	—

The 1,904 admissions into hospital comprised 1,022 of the class zymotic with 8 deaths, 27 constitutional with 2 deaths, 584 local with 10 deaths, 14 developmental, Prevalence of disease.

MADRAS. and 252 violence and accident. The 1,022 cases of zymotic diseases were made up of 514 miasmatic, 334 enthetic, 165 dietic, and 9 parasitic. The 26 constitutional diseases comprised 20 tubercular, and 6 diathetic.

Bangalore stands high as regards the prevalence of all zymotic, or the more preventable class of diseases which reached the ratio of 617·9 per mille of strength. This is, however, double that for 1867, which was 386·7 per mille.

This increase of ratio attaches to the artillery and infantry, but the cavalry gives higher averages than in 1867, under the head of admission and daily sick, though the mortality is greatly reduced.

It was considered premature to state whether this reduced mortality was attributable to the removal of the regiment to the new barracks on the racecourse.

The difference, however, is striking, amounting to 10·1 per mille.

The female hospital had been completed and occupied temporarily as a men's hospital. Two new hospital pavilions were in an advanced state. All these buildings are of two stories upon standard plans.

No further progress had been made in the scheme for the drainage of the plateau on which the barracks are built.

The question of water supply had received much attention, and various schemes had been advanced.

The annual sanitary report speaks favorably of the general sanitary condition of the cantonment.

In reply to the questions soliciting suggestions for improving the sanitary condition of the station, the committee suggest (1) the drainage of the racecourse plateau, (2) the removal of a village lying at the bottom of the royal artillery lines, (3)the completion of the works for supplying the troops with water for all purposes, (4) the introduction of the dry earth system of conservancy, (5) more efficient measures for the check of venereal, (6) the construction of more public latrines in the bazaars and in more populous neighbourhoods, and (7) a better system of conservancy of private houses.

TABLE showing the Rate per 1,000 of SICKNESS, MORTALITY, and INVALIDING, amongst EUROPEAN and NATIVE TROOPS.

Year 1868.	Sickness.	Mortality.			Invaliding.
		In Hospital.	Out of Hospital.	Total.	
EUROPEAN TROOPS. Average strength, 1,654.					
Fevers	116·7	2·4	The specific diseases by which		1·20
Dysentery	20·5	2·4	out-of-hospital deaths take		3·62
Diarrhœa	55·01	—	place are not given in the		1·20
Hepatitis	58·6	3·0	medical stational returns.		6·04
Cholera	—	—	—	—	—
All diseases	1151·1	12·1	3·02	15·12	47·7
NATIVE TROOPS. Average strength, 1,770.					
Fevers	277·9	2·1	The specific diseases by which		—
Dysentery	14·6	—	out-of-hospital deaths take		—
Diarrhœa	22·0	—	place are not given in the		—
Hepatitis	1·6	—	medical stational returns.		—
Cholera	—	—	—	—	—
All diseases	924·8	6·7	1·6	8·3	—

CANNANORE.

Contrast with last year.

The infantry manifests the highest ratios of sickness and mortality.

The regiment (Her Majesty's 1st Royals) had previously served at Kamptee, and during the first year of residence at Cannanore only lost 4·7 per mille, but the ratio rose during the year under review to 20·4. In 1867 the artillery lost 24·2

per mille by deaths, and in 1868, 15·2. Taking the whole European force the mortality is 19·3 per mille for 1868 against 8·6 for 1867, being an increase of 10·7.

Families of European troops.

The average strength of "women" including wives of commissioned, warrant, and non-commissioned officers, and soldiers, is given by the station committee at 118·75, without a casualty. Children are returned at 214·15 with 5 deaths, or in the proportion of 23·3 per mille.

TABLE showing the Rate per 1,000 of SICKNESS, MORTALITY, and INVALIDING of EUROPEAN and NATIVE TROOPS.

Year 1868.	Sickness.	Mortality.			Invaliding.
		In Hospital.	Out of Hospital.	Total.	
EUROPEAN TROOPS.					
Average strength, 671.					
Fevers	78·92	—	The specific diseases by which		2·96
Dysentery	50·7	1·5	out-of-hospital deaths take		4·47
Diarrhœa	135·6	1·5	place are not given in the		2·96
Hepatitis	61·1	3·0	medical stational returns.		5·95
Cholera	—	—	—	—	—
All diseases	1293·5	13·4	5·9	19·3	70·9
NATIVE TROOPS.					
Average strength, 1,411.					
Fevers	54·5	—	The specific diseases by which		
Dysentery	5·6	—	out-of-hospital deaths take		
Diarrhœa	8·5	—	place are not given in the		Not known.
Hepatitis	0·7	—	medical stational returns.		
Cholera	—	—	—	—	
All diseases	355·7	2·8	1·4	4·2	—
PRISONERS.					
Average strength, 257. (Central Jail).					
Fevers	583·6	3·8	—	—	—
Dysentery	62·2	7·7	—	—	—
Diarrhœa	70·0	11·0	—	—	—
Hepatitis	—	—	—	—	—
Cholera	—	—	—	—	—
All diseases	1190·6	42·4	—	42·4	—

BELLARY.

Compared with the previous year the sick admission rate and the constantly sick rate is lower, but the death rate considerably (8·3 per mille) higher.

Families of European troops.

The wives of officers and soldiers are by the Cantonment Committee entered in the report as 153 with one death, or in the proportion of 6·5 per mille. Children are given as 209 with 8 deaths, or 38·2 per mille. But all these deaths occurred amongst the wives and children of non-commissioned officers and soldiers, so that eliminating the strength of wives and children of commissioned and warrant officers the mortuary rate is for women 7·87 and for children 43·0.

Space enjoyed by troops in barracks.

European troops at this station have not enjoyed the full allotment of superficial space in barracks. According to the Cantonment Committee the average has been 73 instead of 90 feet.

New hospital accommodation is about to be provided for the native troops.

The committee make no suggestions for improving the sanitary condition of the cantonment. They remark, "No observation to make."

The value of these stational sanitary reports is evidently not appreciated, and the replies to the questions are given in too perfunctory a manner.

MADRAS.

TABLE showing the Rate per 1,000 of SICKNESS, MORTALITY, and INVALIDING of EUROPEAN and NATIVE TROOPS and PRISONERS in JAIL.

Year 1868.	Sickness.	Mortality.			Invaliding.
		In Hospital.	Out of Hospital.	Total.	
EUROPEAN TROOPS.					
Average strength, 584.					
Fevers	157·5	1·7	The specific diseases by which		—
Disentery	10·3	—	out-of-hospital deaths take		3·42
Diarrhœa	51·4	—	place are not given in the		3·42
Hepatitis	27·4	1·7	medical stational returns.		42·8
Cholera	—	—	—	—	—
All diseases	1121·5	13·6	3·4	17·0	145·4
NATIVE TROOPS.					
Average strength, 1,817.					
Fevers	68·0	2·1	—	—	—
Dysentery	11·0	—	—	—	—
Diarrhœa	6·6	0·5	—	—	—
Hepatitis	2·7	—	—	—	—
Cholera	0·5	0·5	—	—	—
All diseases	369·2	6·0	0·5	6·5	—
PRISONERS.					
Average strength, 384.					
Fevers	255·2	2·6	—	—	—
Dysentery	5·2	—	—	—	—
Diarrhœa	23·4	2·6	—	—	—
Hepatitis	—	—	—	—	—
Cholera	—	—	—	—	—
All diseases	1382	20·8	—	20·8	—

SECUNDERABAD AND TRIMULGHERRY.

The per mille ratios for the year under report at this important station were 1362·4 admissions, 62·6 constantly sick, and 28·5 deaths.

In the report for 1857 it was pointed out that the new cantonment of Trimulgherry was forfeiting the reputation of superior salubrity it had acquired during the first few years of occupation, and that its death-rate for that year was far in excess of that recorded at Secunderabad. As shown in the following table, Trimulgherry in 1868 affords the highest sick ratios, but the smallest mortality.

Ratio per Mille of Strength.	Secunderabad.					Trimulgherry.				
	1860–3.	1864.	1866.	1867.	1868.	1860–3.	1864.	1866.	1867.	1868.
Admissions	1837·5	1573·7	1981·8	1777·7	1157·7	1259·2	1549·6	1353·2	1394·4	1434·3
Deaths	23·4	13·71	44·5	31·24	41·74	12·04	7·61	26·8	35·13	24·9
Daily Sick	—	—	91·3	78·9	51	—	—	72·7	78·7	66·1

The causes of these fluctuations in the sick and death rates of the old and new cantonment are not easy to trace. The great mortality at Trimulgherry in 1867 was attributed to wide-spread intemperance, owing to distribution of bounty money. During 1868 this cause was not in operation, and the mortality showed a decrement of 10·20 per mille; but at Secunderabad the mortality increased nearly in the same ratio, showing an increment of 10·50.

Not a single case of cholera occurred throughout the force.

Health of families of European troops.

The strength of wives of commissioned, warrant, and non-commissioned officers and soldiers is given by the Station Committee at 337·9, as shown in the margin. It would appear that no death occurred amongst the wives of commissioned and warrant officers, but 5 out of 266 soldiers' wives, or in the proportion of 18·8 per mille. The strength of children is given at 614·7 with 58 deaths, or in the ratio of 94·4 per mille. Commissioned officers' children died at the rate of 68·5, warrant officers' at 32·9, and soldiers' at 106 per mille.

	Women.		Children.	
	Str.	D.	Str.	D.
Officers' wives -	54	—	73	5
Warrant Officers'	17·9	—	60·7	2
Soldiers' do. -	226	5	481	51
Total -	337·9	5	614·7	58

The necessity of putting a stop to wet cultivation within cantonment limits, and draining small tanks, was strongly insisted on, but only partially carried out for want of funds.

A scheme of water supply for Trimulgherry has obtained the approval of the Government of India.

The sanitary state of the native town of Secunderabad and the Trimulgherry Bagar is reported to be bad.

The lock hospital rules had not been introduced.

TABLE showing the RATE per 1,000 of SICKNESS, MORTALITY, and INVALIDING amongst EUROPEAN and NATIVE TROOPS.

Year 1868.	Sickness.	Mortality.			Invaliding.
		In Hospital.	Out of Hospital.	Total.	
EUROPEAN TROOPS.					
Average strength 2166.					
Fevers - - -	168·9	1·9	The specific diseases by which		1·38
Dysentery - -	211·4	4·6	out-of-hospital deaths take		19·85
Diarrhœa - -	89·6	—	place are not given in the		1·38
Hepatitis - -	102·03	14·3	medical stational returns.		15·69
Cholera - - -	--	—	—	—	—
All diseases - -	1362·4	27·2	1·3	28·5	82·18
NATIVE TROOPS.					
Average strength 2,586.					
Fevers - - -	660·0	3·7	The specific diseases by which		—
Dysentery - -	8·8	0·3	out-of-hospital deaths take		Not known.
Diarrhœa - -	26·2	1·1	place are not given in the		—
Hepatitis - -	1·1	—	medical stational returns.		—
Cholera - - -	—	—	—	—	—
All diseases - -	1015·8	8·1	2·3	10·4	—

KAMPTEE.

The Sanitary Commissioner had recently inspected and specially reported on this station, bearing testimony to the very excellent system of conservancy in force in his cantonment.

The barracks for the accommodation of European troops were condemned by Sir William Mansfield as old and obsolete, and their site is low and swampy. Plans and estimates for new barracks had been submitted, and a new elevated site, known as "Blogg's Ride," was preferred as checking the large development of malarious fever from which the men used to suffer.

The Commissioner also recommended the selection of the Chiculda Hills as a sanitarium instead of Chindwarrah.

MADRAS. TABLE showing the RATE per 1,000 of SICKNESS, MORTALITY, and INVALIDING amongst EUROPEAN and NATIVE TROOPS.

Year 1868.	Sickness.	Mortality.			Invaliding.
		In Hospital.	Out of Hospital.	Total.	
EUROPEAN TROOPS.					
Average strength, 890.					
Fevers	523·6	—	The specific disease by which		—
Dysentery	28·1	—	out-of-hospital deaths take		4·49
Diarrhœa	67·4	—	place are not given in the		—
Hepatitis	73·03	4·5	medical stational returns.		7·86
Cholera	7·9	4·5	—	—	—
All diseases	1675·2	15·7	2·2	17·9	54·4
NATIVE TROOPS.					
Average strength, 1,340.					
Fevers	560·4	2·2	The specific disease by which		—
Dysentery	20·1	—	out-of-hospital deaths take		—
Diarrhœa	33·5	0·7	place are not given in the		—
Hepatitis	—	—	medical stational returns.		—
Cholera	22·3	8·2	—	—	—
All diseases	1056·7	17·1	0·7	17·8	—

It is necessary to remark that the rate of invaliding at this station has fallen the last two years, owing to the fact that the Infantry regiments occupying the station have been in course of relief for England, resting only for a year prior to embarkation.

SEETABULDEE.

The European garrison of this important outpost is in future to consist of a garrison battery of artillery and a company of British infantry. A new barrack for a half company of infantry had been built, and a second barrack was to follow.

This station was also specially reported upon. The establishment of a lock hospital had been proposed and sanctioned.

TABLE showing the RATE per 1,000 of SICKNESS, MORTALITY, and INVALIDING amongst EUROPEAN and NATIVE TROOPS.

Year 1868.	Sickness.	Mortality.			Invaliding.
		In Hospital.	Out of Hospital.	Total.	
EUROPEAN TROOPS.					
Average strength, 46.					
Fevers	326·1	—	The specific diseases by which		—
Dysentery	86·9	—	out-of-hospital deaths take		—
Diarrhœa	108·7	—	place are not given in the		—
Hepatitis	43·5	—	medical stational returns.		—
Cholera	—	—	—	—	—
All diseases	1608·7	21·7	—	21·7	—
NATIVE TROOPS.					
Average strength, 542.					
Fevers	531·3	—	The specific diseases by which		—
Dysentery	14·7	—	out-of-hospital deaths take		—
Diarrhœa	14·7	—	place are not given in the		—
Hepatitis	—	—	medical stational returns.		—
Cholera	—	—	—	—	—
All diseases	931·7	9·2	—	9·2	—

RANGOON.

The death-rate upon the whole force, which averaged 711, was very low, 8·4 per mille; less than during 1867 by 1·9. In 1866 it was 25·9. Local diseases present a high average. The Cantonment Committee report favourably on the sanitary condition of the cantonment, but it was considered that the conservancy generally might be improved.

TABLE showing the RATE per 1,000 of SICKNESS, MORTALITY, and INVALIDING amongst EUROPEAN and NATIVE TROOPS.

Year 1868.	Sickness.	Mortality.			Invaliding.
		In Hospital.	Out of Hospital.	Total.	
EUROPEAN TROOPS. Average strength, 711.					
Fevers	106·9	1·4	The specific diseases by which		1·41
Dysentery	67·5	—	out-of-hospital deaths take		16·87
Diarrhœa	94·2	—	place are not given in the		2·82
Hepatitis	50·6	1·4	medical stational returns.		22·50
Cholera	—	—	—	—	—
All diseases	1608·0	5·6	2·8	8·4	116·73
NATIVE TROOPS. Average strength, 733.					
Fevers	119·9	2·6	The specific diseases by which		—
Dysentery	124·1	1·3	out-of-hospital deaths take		—
Diarrhœa	38·1	—	place are not given in the		—
Hepatitis	4·0	—	medical stational returns.		—
Cholera	—	—	—	—	—
All diseases	635·0	4·0	—	4·0	—

THAYETMYO.

Contrasted with 1867, the health of the troops had not been so good. The admission rate was higher by 415 per mille, the average daily sick by 14·2, and death by 1·6. The general conservancy of the barracks was well carried out, but public latrines were much needed.

TABLE showing the RATE per 1,000 of SICKNESS, MORTALITY, and INVALIDING amongst EUROPEAN and NATIVE TROOPS.

Year 1868.	Sickness.	Mortality.			Invaliding.
		In Hospital.	Out of Hospital.	Total.	
EUROPEAN TROOPS. Average strength, 480.					
Fevers	160·4	—	The specific diseases by which		6·25
Dysentery	66·7	4·2	out-of-hospital deaths take		10·42
Diarrhœa	89·6	—	place are not given in the		—
Hepatitis	68·8	—	medical stational returns.		10·42
Cholera	—	2·1	—	—	—
All diseases	1606·2	12·5	2·1	14·1	93·3
NATIVE TROOPS. Average strength, 708.					
Fevers	8·4	—	The specific diseases by which		—
Dysentery	7·0	—	out-of-hospital deaths take		—
Diarrhœa	5·6	—	place are not given in the		—
Hepatitis	2·8	—	medical stational returns.		—
Cholera	—	—	—	—	—
All diseases	207·6	2·8	8·4	11·2	—

MADRAS.

Tonghoo.

The figures given in the tabular statement approximate closely to the previous year (1867). The sanitary condition of the cantonment generally is well reported upon.

Table showing the Rate per 1,000 of Sickness, Mortality, and Invaliding amongst European and Native Troops.

Year 1868.	Sickness.	Mortality.			Invaliding.
		In Hospital.	Out of Hospital.	Total.	
European Troops.					
Average strength, 323.					
Fevers	182·6	—	The specific diseases by which		—
Dysentery	46·4	3·1	out-of-hospital deaths take		—
Diarrhœa	43·3	—	place are not given in the		—
Hepatitis	58·8	3·1	medical stational returns.		—
Cholera	—	—	—	—	—
All diseases	1241·4	18·5	9·2	22·7	9·29
Native Troops.					
Average strength, 448.					
Fevers	332·5	—	The specific diseases by which		—
Dysentery	118·3	4·4	out-of-hospital deaths take		—
Diarrhœa	107·5	—	place are not given in the		—
Hepatitis	—	—	medical stational returns.		—
Cholera	—	—	—	—	—
All diseases	1187·5	11·1	—	11·1	—

Port Blair.

The per mille ratios are, admissions, 1306·3; constantly sick, 54·05; and deaths, 27·01—18·01 in, and 9·0 out of, hospital.

Contrast with last year.

These figures, contrasted with last year, show a very considerable reduction (993·7 per mille) in the admission rate; a reduction of 20·0 in the constantly sick; but an increase of 18·0 in the death rate.

Sanitary condition of station.

The drainage of the islands "Ross" and "Viper," upon which the troops are located, is good. An extensive marsh exists on the mainland about three-quarters of a mile from Ross Island, and steps are being taken to reclaim it.

The barrack accommodation for European troops offers only 65·45 in one instance, and 54·5 in the other, superficial feet per man, which is considerably below the authorized standard. The hospital accommodation was ample, 429·85 superficial feet per man.

No epidemic disease visited the troops. Amongst the prisoners one case of cholera occurred, but doubts are entertained as to its genuine spasmodic character.

General conservancy was efficiently carried out. All refuse and filth is carried to and buried upon the mainland. The bazaars are also well kept by a convict gang of sweepers.

The strength of prisoners is as follows:—On Ross Island, 2,770; on Viper Island, 1,090. The free native population is about 650. Deaths are duly registered.

TABLE showing the RATE per 1,000 of the SICKNESS, MORTALITY, and INVALIDING amongst EUROPEAN and NATIVE TROOPS.

Year 1868.	Sickness.	Mortality. In Hospital.	Mortality. Out of Hospital.	Mortality. Total.	Invaliding.
EUROPEAN TROOPS.					
Average strength, 111.					
Fevers	369·3	—	The specific diseases by which		—
Dysentery	45·40	—	out-of-hospital deaths take		—
Diarrhœa	90·1	—	place are not given in the		None.
Hepatitis	36·0	18·01	medical stational returns.		—
Cholera	—	—	—	—	—
All diseases	1306·3	18·01	9·0	27·0	—
NATIVE TROOPS.					
Average strength, 213.					
Fevers	384·8	4·6	The specific diseases by which		—
Dysentery	65·7	4·6	out-of-hospital deaths take		—
Diarrhœa	70·4	4·6	place are not given in the		—
Hepatitis	—	—	medical stational returns.		—
Cholera	—	—	—	—	—
All diseases	1234·7	3·8	—	32·8	—

In contrasting the health status of the army as derived from the stational returns with antecedent periods, the average of the seven years ending 1866 and the year 1867 will be taken with which to compare the results, as shown in the following Table :—

Aggregate sickness and mortality contrasted with previous years as derived from the stational returns.

Ratio per Mille.	Average of 7 Years. 1860–1866.	1867.*	1868.	Remarks.
Admissions	1429·0	1358·2	1388·3	* Column B in last year's Report, page 55.
Daily sick	64·3	60·4	62·54	
Deaths in hospital	17·1	15·7	16·20	
Total deaths	19·8	18·1	19·32	
Strength	12754	10928	9934	

In continuation of the comparisons made in the preceding report, the results in 1867 are shown in the following statement :—

Contrast with other Presidencies.

—	Admissions.	Deaths.	Constantly Sick.
Bengal	1412	30·95	53·0 per mille.
Bombay	1418·5	19·3	58·7 „
Madras	1387·3	19·32	62·54 „

The comparison with previous years in the principal diseases is given in the following Tables :—

MIASMATIC DISEASES.

Ratio per Mille.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.
Admissions	687·4	527·1	489·0	461·6	576·4	551·4	594·3	545·7	463·9
Deaths	7·8	6·7	6·1	7·0	8·6	9·7	9·6	5·39	4·4

MADRAS.

Fevers.

Ratio per Mille.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.
Admissions -	380·4	248·0	228·1	202·4	227·4	208·0	241·0	263·8	185·2
Deaths -	2·3	1·8	1·3	1·5	2·4	3·1	2·1	1·08	1·5

Dysentery.

Ratio per Mille.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.
Admissions -	85·0	74·9	62·0	64·3	75·5	109·8	100·4	95·9	79·6
Deaths - -	1·5	1·7	1·2	1·7	1·7	3·3	3·9	2·74	1·8

Diarrhœa.

Ratio per Mille.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.
Admissions -	94·9	71·4	65·2	70·9	101·8	101·8	103·5	71·9	73·3
Deaths - -	1·4	0·6	0·3	0·5	0·9	0·8	0·6	0·27	0·20

Hepatitis.

Ratio per Mille.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.
Admissions -	61·2	61·9	53·3	64·9	70·2	79·5	77·2	71·6	73·8
Deaths - -	2·7	2·3	3·1	2·5	2·4	3·6	2·9	3·02	5·3

Venereal Disease.

Ratio per Mille.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.
Admissions -	267·0	293·3	304·5	257·3	269·2	227·7	234·7	208·5	250·5

A mean for the whole presidency of 250·5 does not say much for the working of lock hospitals.

The relative prevalence of the disease at these stations at which lock hospitals exist, contrasted with those at which these institutions have not been established, is shown below. Fort Saint George (Madras) is classed with those at which no lock hospital exists, as the institution was only opened at the close of the year.

Ratios of Prevalence of Venereal Diseases at

Stations with Lock Hospitals.	Per Mille.	Stations without Lock Hospitals.	Per Mille.
Trichinopoly - - -	359·1	Madras - - - -	435·8
St. Thomas' Mount - -	351·3	Rangoon - - - -	468·3
Bellary - - - -	256·8	Thayetmyo - - -	297·9
Wellington - - -	251·0	Port Blair - - -	207·2
Kamptee - - - -	247·2	Tonghoo - - - -	160·9
Bangalore - - - -	201·9	Palaveram - - -	127·4
Secunderabad - - -	195·7	Malliapoorum - - -	97·5
Cannanore - - -	126·7	Calicut - - - -	80·0
Mean - -	248·6	Mean - -	234·4

TABLE showing the relative PREVALENCE of DISEASE and MORTALITY at different STATIONS of the ARMY during the Year 1868, compared with the Average of the previous Five Years. (Depôts excluded.)

Groups.	Stations.	Ratios per Mille of Strength.							
		Average of 5 Years, 1863 to 1867.		1868.		Groups.			
						Average of 5 Years.		1868.	
		A.	D.	A.	D.	A.	D.	A.	D.
Sea Coast	Fort St. George*	1964·8	19·96	1890·6	15·7	1556·3	19·48	1386·5	19·46
	St. Thomas' Mount	1448·3	20·6	1428·5	16·36				
	Cannanore	1323·8	13·85	1293·5	19·3				
	Calicut	835·7	14·28	933·3	26·6				
Plains	Trichinopoly	1481·1	17·61	1422·7	4·5	1350·5	17·78	1193·0	20·45
	Malliapooram	1056·9	18·05	963·4	36·4				
Table Lands	Bangalore	1001·5	12·68	1151·1	15·12	1396·1	18·40	1327·5	19·63
	Bellary	1539·3	17·8	1121·5	17·0				
	Secunderabad	1484·8	23·23	1362·4	28·5				
	Kamptee	1716·8	17·86	1675·2	17·9				
Burmah	Rangoon	1206·5	18·71	1668·07	8·4	1248·5	21·09	1455·4	19·42
	Tonghoo	1129·3	18·11	1241·4	27·7				
	Thayetmyo	1349·8	27·67	1606·2	14·6				
	Port Blair	1739·5	12·86	1306·3	27·01				

* Mean of two years only. In the table in the "Army Statistical and Sanitary Reports," Fort Saint George and Saint Thomas' Mount are thrown together. The figures representing the group of sea coast stations are for the full period.

SECTION III.

SICKNESS AND MORTALITY AMONGST NATIVE TROOPS.

By the Adjutant General's returns, the strength of the Native army shows an increase of 31 men over that of 1867. It stood on the 1st January 1868 at 31,787, and on the 1st January 1869 at 31,818. The mortality reached 454, including men dying on sick certificate at their own homes, and 524 were discharged as invalids.

Sickness and mortality by medical returns.

By the Medical stational returns, the average annual strength, exclusive of troops serving in other Presidencies, was 28,153; the admissions into hospital 19,925; the constantly sick 825·2, and the deaths 286. The following are the per mille ratios:—

Admitted		707·8
Constantly sick		29·48
Died	In hospital 8·6	10·0
	Out of do. 1·4	

Sickness and mortality by Adjutant General's returns.

The numbers "died" and "invalided" by the Adjutant General's returns calculated upon the mean strength as derived from the Medical returns are:—

Died	16·12
Invalided	18·61

MADRAS.

Deaths occurring amongst Sepoys absent from their corps on sick certificate at their own homes, do not find admission into the Medical returns. The death rate last given above, being calculated upon the mean strength by the Medical returns, exhibits a higher ratio than the true one. If calculated upon the strength by the Adjutant General's returns, by taking the mean of the remaining on the 1st January 1868 and 1st January 1869, it is 14·3 and the invalided 16·5.

Comparison with 1867.

Compared with 1867, the per mille ratios derived from the medical returns are as follows:—Admission rate 42·37 lower; the constantly sick rate the same, but the death rate 0·4 higher.

Stational sickness and mortality.

At some of the stations, sickness and mortality had been very high, the result of the prevalence of miasmatic disease. This is shown in the body of the report; but a few instances are given in illustration of the influence of the climates of certain stations upon the health of native troops.

Stations.	Ratio per Mille of Strength.	
	Admitted.	Died.
Chandah - - - - -	1462·1	42·0
Shoagheen (Burmah) - - - -	1708·3	33.3
Port Blair do. - - - -	1234·7	32·8
Sumbulpore - - - - -	2683·5	28·4
Labuan - - - - -	1884·6	25·6
Luckady - - - - -	2286·5	11·6

The loss of life has been very great at the first five of these stations, and although less at Luckady, the very high admission rate evidences the extent to which the troops (Sappers) were rendered inefficient by fevers contracted at that station.

The following table shows the per mille rates of sickness and mortality by the more important diseases and "all diseases."

1868.	Sickness.	Mortality.		Total.	Invaliding.
		In Hospital.	Out of Hospital.		
Average strength, 28,153.					
Fevers - - -	297·5	1·8	Not shown in	—	Information
Dysentery -	21·7	0·3	the returns	—	not obtain-
Diarrhœa - - -	23·1	0·7	received.	—	able.
Hepatitis - - -	1·5	0·03	—	—	—
Cholera - - -	1·7	0·6	—	—	—
All diseases - -	707·8	8·6	1·4	10·0	*18·61

* By Adjutant General's Return.

Influence of climate.

The influence of climate upon the health of native troops may be best illustrated by grouping the stations as in the section assigned to European troops, according to their position on the seaboard, upon table lands or plains, and hill stations and foreign stations.

Locality.	Stations.	Ratios per Mille.	
		Admitted.	Died.
Sea Coast - -	Madras - - -	556·9	5·3
	Mangalore - -	368·9	11·7
	Vizigapatam - -	419·0	15·6
	Quilon - - -	354·5	6·0
	Saint Thomas' Mount -	551·9	5·4
	Trevandrum - -	597·7	—
	Cannanore - -	355·7	4·2
	Means - -	457·8	6·9
Plains - - -	Vizianagram - -	245·5	11·7
	Trichinopoly - -	261·2	10·6
	Berhampore - -	355·9	13·5
	Vellore - - -	394·7	15·2
	Palamcottah - -	463·3	8·8
	Trichoor - - -	485·0	5·9
	Samulcottah - -	515·8	5·5
	Cuttack - - -	1368·8	19·6
	Means - -	511·3	11·3
Table Lands - -	Cuddapah - -	81·2	1·2
	Hurryhur - -	130·9	1·5
	Bellary - - -	369·2	6·5
	Hoosingabad - -	760·5	10·5
	Raepore - - -	796·7	22·7
	Seroncha - -	896·3	12·1
	Bangalore - -	924·8	8·3
	Seetabuldee - -	931·7	9·2
	Secunderabad - -	1015·8	10·4
	French Rocks - -	1049·6	—
	Kamptee - - -	1056·7	17·8
	Kurnool - - -	1220·6	3·4
	Chandah - - -	1462·1	42·0
	Luckady - - -	2286·5	11·6
	Sumbulpore - -	2683·5	28·4
	Means - -	1044·4	12·4
Hill Stations - -	Mercara - - -	540·4	7·1
Foreign Stations (Burmah) - - -	Rangoon - - -	635·7	4·0
	Port Blair - -	1234·7	32·8
	Moulmein - -	694·4	3·6
	Shoagheen - -	1708·3	33·3
	Tonghoo - - -	1187·5	11·1
	Thayetmyo - -	267·6	11·2
	Means - -	954·7	16·0
Straits, &c. - -	Labuan - - -	1884·6	25·6
	Penang - - -	1448·5	11·6
	Malacca - - -	1119·4	6·2
	Singapore - -	745·1	10·5
	Means - -	1299·14	13·5

TABLE showing SICKNESS and MORTALITY and RATIO per MILLE of MEAN STRENGTH by principal DISEASES in each DIVISIONS and STATION of the ARMY occupied by NATIVE TROOPS (compiled from Stational Returns, Depôts excluded).

MILITARY DIVISIONS.	STATIONS.	RATIO PER 1,000 OF MEAN STRENGTH.													
		Admitted by all Diseases.	Average Daily Sick.	Died.		Fevers.		Dysentery.		Diarrhœa.		Hepatitis.		Cholera.	
				In Hospital.	Out of Hospital.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Centre	Madras	556·9	25·2	5·3	—	135·0	—	13·5	0·3	7·2	1·1	1·4	—	9·6	—
	St. Thomas' Mount	551·9	13·1	5·4	—	153·0	—	32·7	—	10·9	—	—	—	5·4	—
	Vellore	394·7	21·8	9·7	5·5	103·7	1·3	8·3	—	6·9	2·7	—	—	—	—
	Means	517·1	23·6	6·4	1·3	128·6	0·3	13·4	—	7·4	1·01	2·3	—	0·6	—
Northern	Waltair	419·0	36·9	14·2	1·4	63·9	2·8	8·5	—	5·6	—	—	—	—	—
	Samulcottah	515·8	13·7	5·5	—	143·9	1·3	8·2	—	4·1	—	—	—	—	—
	Vizianagram	245·5	12·0	11·7	—	52·9	1·4	—	—	—	—	—	—	—	—
	Berhampore	355·9	16·5	8·1	5·4	95·1	2·7	13·5	—	—	—	—	—	—	—
	Cuttack	1368·8	32·3	15·4	4·2	732·1	12·6	51·8	—	54·6	1·4	8·4	—	—	—
	Sumbulpore	2683·5	39·2	28·4	—	2340·3	18·9	60·1	3·1	15·8	—	3·1	—	—	—
	Means	795·7	24·4	12·8	1·7	430·5	5·4	23·6	0·5	15·1	0·2	2·2	0·2	—	—
Mysore	Bangalore	924·8	34·4	6·7	1·7	277·9	2·1	14·6	—	22·0	—	1·6	—	—	—
	French Rocks	1049·6	46·9	—	—	608·6	—	6·2	—	14·4	—	2·0	—	—	—
	Mercara	504·3	18·2	5·7	1·4	249·1	2·8	30·0	—	26·9	—	4·3	—	—	—
	Hurryhur	130·9	16·7	1·5	—	16·7	—	3·0	—	—	—	—	—	—	—
	Means	715·9	29·7	4·7	1·1	274·2	1·6	14·4	—	17·7	—	1·9	—	—	—
Malabar and Canara	Cannanore	355·7	17·2	2·8	1·4	54·5	—	5·6	—	8·5	—	0·7	—	—	—
	Mangalore	368·9	16·0	6·7	1·6	57·3	1·3	18·2	—	11·7	—	1·3	—	1·3	—
	Luckady	2286·5	84·2	5·8	5·8	817·8	—	52·6	—	76·0	—	5·8	—	—	—
	Means	500·6	22·2	5·5	2·9	111·1	—	13·2	0·4	14·4	—	1·2	—	0·4	—
Ceded Districts	Bellary	369·2	11·8	6·0	0·5	68·0	2·1	11·0	—	6·6	0·5	2·7	—	0·5	0·5
	Cuddapah	81·2	11·4	1·2	—	37·5	—	3·7	—	2·5	—	—	—	—	—
	Kurnool	1220·6	65·5	3·4	—	732·7	1·7	29·3	—	18·9	—	—	—	—	—
	Means	451·6	24·3	4·3	0·3	174·5	1·5	12·2	—	7·8	0·3	1·5	—	0·3	0·3

Table showing Sickness and Mortality, &c.—*continued.*

Military Divisions.	Stations.	Ratio per 1,000 of mean Strength.													
		Admitted by all Diseases.	Average Daily Sick.	Died.		Fevers.		Dysentery.		Diarrhœa.		Hepatitis.		Cholera.	
				In Hospital.	Out of Hospital.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Nagpore Force	Kamptee	1056·7	32·9	17·1	0·7	560·1	2·2	20·1	—	33·5	0·7	—	—	22·3	8·2
	Seetabuldee	931·7	19·1	9·2	—	531·3	—	14·7	—	14·7	—	—	—	—	—
	Raepore	796·7	31·3	19·5	3·2	422·7	6·5	6·5	—	53·6	0·2	1·6	—	—	—
	Hoosungabad	760·5	26·3	10·5	—	552·6	2·6	7·8	—	5·2	—	—	—	—	—
	Seroncha	896·3	18·2	12·1	—	323·1	—	36·5	—	42·6	—	6·0	—	—	—
	Chanda	1462·1	50·6	42·0	—	966·3	16·8	8·4	—	8·4	—	—	—	—	—
	Means	956·01	29·4	16·1	0·9	530·7	3·1	15·5	—	30·3	0·9	0·6	—	9·5	3·5
Hyd. Subsidiary Force	Secunderabad	1015·8	35·7	8·1	2·3	659·04	3·7	8·8	0·3	26·2	1·1	1·1	—	—	—
Southern Division	Trichinopoly	261·2	11·3	9·8	0·8	54·04	—	0·8	—	10·6	0·8	0·8	—	4·9	4·9
	Palamcottah	463·3	16·2	7·1	1·7	96·6	—	35·7	1·8	16·1	3·7	—	—	—	—
	Quilon	354·5	22·5	4·09	2·04	18·4	—	10·2	—	—	—	—	—	—	—
	Trichoor	485·0	20·3	5·9	—	102·04	—	5·9	—	—	—	—	—	—	—
	Trevandrum	597·7	21·8	—	—	114·9	—	34·4	—	—	—	—	—	—	—
	Means	334·6	15·5	7·5	1·1	62·6	—	11·8	0·3	8·7	1·1	1·1	—	2·3	2·3
Pegu Division	Rangoon	635·7	25·3	4·6	—	119·05	2·7	24·1	1·3	38·1	—	4·09	—	—	—
	Thayetmyoo	207·6	16·5	2·8	8·4	8·4	—	7·06	—	5·6	—	2·8	—	—	—
	Tonghoo	1187·5	67·8	11·1	—	332·5	—	118·3	4·4	107·1	—	—	—	—	—
	Shoagheen	1708·3	68·3	33·3	—	1041·6	8·3	58·3	—	50·0	8·3	—	—	—	—
	Moulmein	694·4	54·07	3·6	—	97·6	—	45·2	—	41·5	—	—	—	—	—
	Port Blair	1234·7	53·05	32·8	—	384·8	4·6	65·7	4·6	70·4	4·6	—	—	—	—
	Means	719·6	39·6	8·2	2·1	181·6	1·4	70·2	1·4	44·6	0·7	2·1	—	—	—
Straits Settlements	Singapore	745·1	40·5	7·08	3·5	247·7	1·7	61·9	3·5	35·4	1·7	1·7	—	—	—
	Malacca	1119·4	35·8	6·2	—	254·0	—	31·4	—	207·5	—	—	—	—	—
	Penang	1448·5	55·8	7·0	4·6	490·6	4·6	46·7	—	163·5	—	—	—	—	—
	Labuan	1884·6	46·7	25·6	—	1160·2	—	19·2	—	70·5	6·4	—	—	—	—
	Means	1156·7	45·7	9·1	3·05	438·07	2·2	48·1	1·5	102·4	1·5	0·7	—	—	—

PART II.

CIVIL.

SECTION I.

MADRAS.

Sanitary Condition of Jails.

A most gratifying declension had taken place during 1868 in the sickness and mortality in jails, considered due to the abatement of over-crowding by provision of central jails, and enlargement and improvement of the district prisons, and also by the introduction of a better scale of diet.

Years.	Ratios per Mille of average Strength.	
	Admissions.	Deaths.
1861-62	1502·6	93·0
1862-63	1319·0	89·4
1863-64	1373·6	107·6
1864-65	1491·1	101·5
1865	1290·6	126·3
1866	1249·7	124·5
1867	1012·4	53·9
1868	869·5	33·8

In the report for 1867, it was pointed out that the mortality of the new central jails was considerably below that of the district jails. The same results appear in the year under report (1868.)

		Mortality per Mille.	
		1867.	1868.
Finished Jails	Coimbatore	25·4	31·8
	Rajahmundry	19·1	6·5
	Salem	27·6	19·1
	Mean	24·0	19·1
	Difference in favour of 1868	—	4·9
Unfinished Jails	Vellore	3·8	20·1
	Trichinopoly	19·3	18·0
	Cannanore	94·4	42·4
	Mean	39·1	26·8
	Difference in favour of 1868	—	12·3
District Jails		54·4	34·7
	Difference in favour of 1868	—	19·7

These figures represent a very considerable saving of human life, and justify the hope of still further reduction in the mortuary rates, as progress is made in jail accommodation, and as the influences of better diet and general sanitary administration have time to manifest themselves. The cause of the high rate of mortality still attaching to certain district jails,* notwithstanding material improvements, is not very apparent. It is to be feared that the diseases that most contribute to mortality, bowel complaints, have so tainted the soils and buildings, as to be ineradicable by ordinary means, pointing to the necessity, should the high death rate prove persistent, of abandoning them altogether, as is about to be done at Calicut, where a new district jail is being erected.

* Calicut, Trichinopoly.

Steady progress had been made during the year in jail accommodation. The central jails of Trichinopoly, Vellore, and Cannanore were nearly completed.

Average number of prisoners during the year.

The average strength of the prisoners incarcerated in the different jails has, by the medical returns, been 10,063 of these; 8,763 have passed through the hospital, 336·6 have been constantly sick, and 341 have died. These figures yield the following per mille ratios:—

Admitted sick - -	869·5
Average daily sick - -	33·4
Died - - -	33·8

Comparison with last year.

The strength is 299 less than for the previous year. The sick ratio is 142·9 per mille less, and the death rate shows a reduction of 20·1 per mille, and is the lowest yet recorded. A reduction of 20 per mille in the death rate represents upon the average strength of 10,063 a saving of no less than 201 lives.

Comparison of district jails with last year.

The comparison of the salubrity of district jails with last year is also shown in a tabular form, and the results are even more striking than in the case of the central jails.

Sickness and Mortality in District Jails in 1867 and 1868 contrasted.

District Jails.	Ratios per Mille of Mean Strength.							
	Average annual Strength.		Average Daily Sick.		Admitted.		Died.	
	1867.	1868.	1867.	1868.	1867.	1868.	1867.	1868.
Lawrence Asylum Jail	521	501	31·8	33·1	982·7	890·2	32·6	21·9
Madras Penitentiary -	326	483	30·6	34·5	1303·6	1269·1	46·0	76·6
Madura - -	476	474	25·6	22·1	579·8	409·2	29·4	14·7
Cuddalore - -	539	417	30·5	48·3	562·1	628·2	44·5	69·5
Bellary - -	588	384	48·8	64·8	920·0	1382·8	154·7	20·8
Chittoor - -	329	355	72·9	56·3	960·4	938·0	30·3	25·3
Vizagapatam - -	321	310	35·2	22·2	1193·1	461·2	34·2	22·5
Nellore - -	259	267	17·7	9·7	467·1	258·4	30·8	11·2
Cuddapah - -	311	244	80·7	78·6	1752·4	2282·8	61·0	40·9
Palamcottah - -	263	238	29·6	31·9	802·2	789·9	91·2	75·6
Calicut - -	247	228	48·1	28·5	829·9	995·6	121·4	135·9
Chingleput - -	203	210	61·3	22·8	1581·2	590·4	19·7	4·7
Kurnool - -	259	208	69·8	57·6	1599·4	2057·6	162·1	28·8
Trichinopoly - -	223	196	36·8	26·0	865·4	438·7	89·6	76·5
Vellore - -	241	180	17·0	22·2	630·7	616·6	33·1	33·3
Coimbatore - -	209	174	46·8	41·3	1090·9	959·7	28·7	40·2
Tanjore - -	178	174	12·3	12·5	303·3	316·0	95·5	63·2
Neddivettum - -	166	171	27·7	52·0	921·6	888·0	66·2	40·9
Guntoor - -	218	165	31·1	26·6	330·2	884·8	9·1	6·0
Mangalore - -	233	161	77·2	66·4	1836·9	1484·4	103·0	24·8
Tranquebar - -	213	159	72·3	33·9	1652·5	886·7	32·8	62·8
Berhampore - -	271	158	64·5	29·1	1202·9	588·6	95·9	88·6
Paumben - -	120	113	52·5	37·8	991·6	1097·3	75·0	—
Ootacamund - -	94	111	34·0	36·9	468·0	335·3	10·6	18·0
Russelcondah - -	121	111	85·1	69·5	4033·0	2446·4	41·3	44·6
Tellicherry - -	137	101	60·3	27·7	1525·5	811·8	131·3	39·6
Rajahmundry - -	102	97	48·1	60·8	1960·7	2000·0	49·0	—
Guindy - -	74	76	37·8	38·1	1459·4	1078·9	13·5	—
Dodabetta - -	72	75	19·4	9·3	3263·8	920·0	—	—
Masulipatam - -	115	71	18·2	16·4	834·7	309·8	17·3	—
Cannanore - -	71	62	8·4	58·0	239·4	887·0	42·2	16·1
H. M.'s Jail, Madras -	26	23	69·2	47·8	2269·2	2739·1	—	43·4
Cochin - -	22	17	59·0	64·7	2272·7	2294·1	—	—
Aggregate strength -	7,583	6,714	Mean Mortality.				54·4	34·7

The following are the results of a classification of the different district jails in relation to locality.

		Mortality per Mille. 1867.	1868.
Hill stations - - - - - -		30·7	33·9
Sea coast stations	East coast - - - - -	31·2	27·5
	West „ - - - - -	79·6	43·3
Plains -	Elevated and remote from the sea -	87·9	32·7
	On the coast line, but not on the sea -	53·2	36·9

MADRAS.

Sickness and mortality of different classes of prisoners.

The results of the two years are as follows:—

—	Per Mille of Strength.			
	Admitted.		Died.	
	1867.	1868.	1867.	1868.
Convicted prisoners - -	1020·6	873·1	43·8	33·9
Under trial do. - -	293·7	377·3	38·4	37·7
Civil prisoners or debtors -	5670·5	495·1	23·5	29·1

The prevalence of and mortality from the principal diseases is shown in the following table:—

Diseases.	Admitted.	Died.	Ratios per Mille of Strength.	
			Admitted.	Died.
Fevers - - -	2,295	26	228·1	2·5
Dysentery - - -	570	56	56·6	5·5
Diarrhœa - - -	630	74	62·6	7·3
Hepatitis - - -	1	—	0·09	—
Cholera - - -	8	3	0·7	0·2
Dropsies - - -	59	20	5·8	1·9
Atrophy - - -	263	58	26·1	5·7

Extended to the different jails, the results for the same diseases expressed in the same ratios, are as follows:—

Jails.	Ratios per Mille of Strength.											
	Fevers.		Dysentery.		Diarrhœa.		Cholera.		Dropsies.		Atrophic Diseases.	
A.—Central.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Coimbatore - -	60·5	2·1	12·7	5·3	44·5	2·1	—	—	2·1	1·0	35·0	9·5
Rajahmundry - -	364·5	2·6	79·4	1·3	79·4	1·3	—	—	1·3	—	23·4	1·3
Salem - - -	111·4	—	15·6	—	26·1	5·2	—	—	1·7	—	8·7	5·2
Trichinopoly - -	29·4	—	15·8	—	40·7	13·5	—	—	6·7	—	4·5	2·2
Vellore - - -	259·3	—	8·6	—	95·1	8·6	—	—	2·8	2·8	46·1	2·8
Cannanore - -	583·6	3·8	62·2	7·7	70·0	11·6	—	—	11·6	3·8	15·5	15·5
B.—District.												
Madras Penitentiary -	177·6	1·9	89·8	3·9	77·8	3·9	—	—	9·9	—	19·9	1·9
Lawrence Asylum Works	293·9	14·4	153·2	22·7	57·9	6·2	—	—	4·1	2·0	70·3	14·4
Madura - - -	126·5	—	23·2	2·1	10·5	—	10·5	—	4·2	2·1	29·5	8·4
Cuddalore - -	59·9	2·3	69·5	11·9	69·5	19·1	2·3	2·3	4·7	2·3	76·7	23·9
Bellary - - -	255·2	2·6	5·2	—	23·4	2·6	—	—	5·2	5·2	2·6	2·6
Chittoor - - -	219·7	—	33·8	2·8	76·0	8·4	—	—	—	—	2·8	2·8
Vizagapatam - -	180·6	3·2	58·0	9·6	48·3	—	—	—	—	—	6·4	3·2
Nellore - - -	56·1	—	29·9	3·7	11·2	—	—	—	3·7	—	7·4	3·7
Cuddapah - -	856·5	4·0	155·7	8·6	131·1	8·1	—	—	16·3	8·1	12·2	8·1
Palamcottah - -	92·0	—	75·6	16·8	193·2	37·8	—	—	29·4	8·4	12·6	—
Calicut - - -	61·4	—	70·1	4·3	153·5	30·7	—	—	26·3	8·7	26·3	8·7
Chingleput - -	161·9	—	33·3	—	19·0	—	—	—	—	—	9·5	—
Kurnool - - -	831·2	—	149·0	4·3	67·3	9·6	—	—	4·8	—	—	—
Trichinopoly - -	20·4	—	40·8	5·1	117·8	20·4	—	—	—	5·1	30·6	10·2
Vellore - - -	161·5	5·5	16·6	—	16·6	5·5	—	—	11·1	5·5	22·2	—
Coimbatore - -	51·7	—	34·4	17·2	34·4	5·7	—	—	—	—	22·9	—
Tanjore - - -	74·7	—	97·7	5·7	57·4	28·7	11·4	11·4	11·4	—	—	—
Neddivuttum - -	251·4	—	76·0	5·8	81·8	17·5	—	—	5·8	5·8	11·6	5·8
Guntoor - - -	369·6	—	6·0	—	12·1	—	—	—	—	—	18·1	—
Mangalore - -	490·6	18·6	142·8	—	80·7	6·2	—	—	12·4	—	118·0	—
Tranquebar - -	327·0	6·2	69·1	6·2	69·1	12·5	—	—	—	6·2	37·7	25·1
Berhampore - -	113·9	6·3	126·5	50·6	94·9	6·3	—	—	44·3	12·6	37·9	6·3
Paumbem - - -	141·5	—	17·6	—	70·7	—	—	—	—	—	70·7	—
Ootacamund - -	45·0	9·0	45·0	—	9·0	—	—	—	—	—	18·0	—
Russelcondah - -	1,086·5	—	125·0	—	144·2	9·6	—	—	9·6	—	28·8	9·6
Tellicherry - -	217·8	19·8	99·0	9·9	69·3	—	—	—	9·9	—	49·5	—
Rajahmundry - -	1,010·3	—	51·5	—	195·8	—	—	—	—	—	10·3	—
Guindy - - -	368·4	—	13·1	—	26·3	—	—	—	—	—	—	—
Dodabetta - -	213·3	—	133·3	—	80·0	—	—	—	—	—	—	—
Masulipatam - -	84·5	—	—	—	14·0	—	—	—	—	—	—	—
Cannanore - -	48·3	—	48·3	—	16·1	—	—	—	—	—	80·6	—
H. M.'s Jail, Madras -	173·9	—	—	—	—	—	—	—	—	—	43·4	—
Cochin - - -	352·9	—	—	—	—	—	—	—	—	—	—	—

Cholera, it will be noted, occurred in three jails (all district jails). Fevers prevailed in relation to strength to a less extent than for many years past.

Fevers.

	Per Mille of Strength.	
	Admissions.	Deaths.
1861–62 - - -	308·3	5·3
1862–63 - - -	356·2	3·1
1863–64 - - -	315·7	5·3
1864–65 - - -	341·1	4·5
1865 - - -	316·2	6·3
1866 - - -	274·6	5·1
1867 - - -	260·4	3·8
1868 - - -	228·1	2·5

The declension is also very considerable in dysentery, diarrhœa, dropsy, and atrophic diseases.

Diseases.	1867.		1868.		Ratios per Mille.			
					1867.		1868.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Dysentery - -	761	92	570	56	73·4	8·8	56·6	5·5
Diarrhœa - -	913	109	630	74	88·1	10·5	62·6	7·3
Dropsies - -	109	55	59	20	10·5	5·3	5·8	1·9
Atrophy - -	391	125	263	58	37·7	12·06	26·1	5·7

The committee on subsidiary jail accommodation were earnestly engaged during the year in determining the extent of accommodation required. Subsidiary jail rules were drawn up relating to the supervision, safe custody, labour, diet, and periodical inspection of prisoners. Standard plans for the buildings had been adopted, and several jails had been erected at an estimated cost of 17,31,000 rupees.

Subsidiary jails.

Police.

18. The strength of the police force, including that of the town of Madras, has averaged approximately 24,692 men, and the deaths in hospital have been 276. These figures, contributed by the Inspector-General of Police, are for the official year 1868–69. They yield the per mille mortuary rate of 11·18, or 1·18 in excess of the mortality amongst native troops.

Strength and mortality.

Table showing the Sickness and Mortality among the Jail Population of the Madras Presidency, during the year 1868, and the prevalence of the principal Diseases in each Month of the Year.

Months.	Average Strength.	Total Admissions.	Total Deaths.	Average Daily Sick.	Admissions into Hospital.																		
					Small-pox.	Fevers.	Dysentery.	Diarrhœa.	Cholera.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Dracunculus.	Anasarca and Dropsies.	Phthisis.	Apoplexy.	Paralysis.	Heart Diseases.	Hepatic Diseases.	Skin Diseases.	Atrophia, Asthenia, and Anæmia.	Accidents.	All other Causes.
January - -	9,787	661	33	315·2	8	172	25	45	1	10	23	23	13	5	1	—	—	1	—	96	21	71	146
February - -	9,827	653	29	332·4	6	198	38	45	6	10	26	29	29	5	1	—	—	2	—	74	23	52	112
March - -	9,912	749	21	336·5	3	169	39	40	—	12	31	37	60	7	2	—	2	—	—	114	23	66	144
April - - -	9,973	671	21	342·2	6	156	31	41	—	12	25	31	57	1	1	—	—	—	—	115	14	57	124
May - - -	10,001	718	20	339·4	6	177	57	50	1	10	25	31	49	6	—	—	1	—	—	117	18	51	119
June - - -	10,042	773	33	349·7	1	195	77	63	—	9	20	37	50	4	—	—	3	1	—	136	17	44	116
July - - -	10,095	840	34	363·0	—	258	88	76	—	13	36	22	26	6	2	—	2	—	—	108	20	46	137
August - -	10,225	760	31	327·3	1	206	67	67	—	17	37	27	18	1	—	—	—	—	—	136	29	48	106
September -	10,309	773	23	340·8	2	192	46	54	—	7	27	30	11	5	—	—	1	—	—	166	32	38	162
October - -	10,248	779	33	341·7	—	215	25	47	—	11	39	28	11	6	2	—	1	—	—	155	26	57	156
November - -	10,211	724	28	328·0	—	178	39	49	—	12	24	31	18	4	—	—	2	—	—	158	24	49	136
December - -	10,132	662	35	323·5	5	179	38	53	—	6	23	28	7	9	1	—	1	1	1	124	16	48	122
For the year -	10,063	8,763	341	336·6	38	2,295	570	630	8	129	336	351	349	59	10	—	13	5	1	1,499	263	627	1,580

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Months.	Ratio per 1,000 of Strength.			Deaths in Hospital.																	
	Total Admissions.	Total Deaths.	Average Daily Sick.	Small-pox.	Fevers.	Dysentery.	Diarrhœa.	Cholera.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Dracunculus.	Anasarca and Dropsies.	Phthisis.	Apoplexy	Paralysis.	Heart Diseases.	Hepatic Diseases.	Skin Diseases.	Atrophia, Asthenia, and Anæmia.	Accidents.	All other Causes.
Admissions per 1,000 of Strength.																					
For the year	3·7	228·1	56·6	62·6	0·7	12·8	33·3	34·8	34·6	5·8	0·9	—	1·2	0·4	0·09	148·9	26·1	62·3	157·0		
January	67·5	3·3	32·2	2	1	3	7	—	—	—	—	6	1	—	1	1	—	—	7	—	4
February	65·7	2·9	33·2	—	2	3	4	3	—	1	—	—	1	—	1	1	—	—	5	—	8
March	74·9	2·1	33·6	1	3	5	1	—	—	1	—	—	2	1	—	—	—	—	3	—	4
April	67·2	2·1	34·3	1	1	3	5	—	—	—	—	—	1	1	—	—	—	—	3	—	6
May	71·7	1·9	33·9	—	3	2	6	—	—	—	—	—	1	1	—	—	—	—	4	1	2
June	76·9	3·2	34·8	—	1	9	6	—	—	1	1	—	1	—	—	1	1	—	4	—	8
July	83·2	3·3	35·9	—	2	6	9	—	—	—	—	—	2	—	—	—	—	—	9	—	6
August	74·3	3·0	32·0	—	2	5	8	—	—	1	1	—	2	—	—	—	—	—	3	—	4
September	74·9	2·2	33·1	1	—	4	6	—	—	—	—	—	1	—	—	—	—	—	5	—	6
October	76·0	3·2	34·1	—	4	5	7	—	—	—	—	—	—	2	—	—	—	—	4	—	9
November	70·9	2·7	32·1	—	2	5	6	—	—	1	—	—	—	—	—	1	—	—	8	—	5
December	65·3	3·4	31·9	—	5	6	9	—	—	1	—	—	3	—	—	—	1	—	3	—	6
For the year	869·5	33·8	33·4	5	26	56	74	3	—	6	2	—	20	6	1	3	4	—	58	1	68
Deaths per 1,000 of Strength.																					
For the year	0·4	2·5	5·5	7·3	0·2	—	0·5	0·1	—	1·9	0·5	0·09	0·2	0·3	—	0·7	5·7	0·09	6·7		

SECTION II.

General Population.

The general immunity from cholera and increased mortality from small-pox has been already alluded to.

The system of registration was still very imperfect, and the death-rates cannot be received as correct, but new and improved forms had been introduced.

In 1867 the calculations were framed upon a population of 21,879,713, and during the year under report upon 24,367,323; the census returns giving 26,089,052.

The per mille rates for the two years are as follows:—

	1867.	1868.
Mortality by all causes	16·4	15·4
„ cholera	1·4	0·3
„ small pox	1·2	1·3
„ fevers	5·0	4·2
„ age	1·6	1·5

The total number of deaths registered amounted to 378,757, or 18,976 in excess of those recorded in 1867. Of these 200,956 occurred amongst males, and 177,801 amongst females, or in the proportion of 100 males to 88·47 females.

		1867.	1868.	Difference.
	Total Deaths.	3,59,781	3,78,757	+ 18,976
Natural Causes	By cholera	32,591	8,023	— 24,568
	„ small-pox	27,284	33,531	+ 5,247
	„ fever	1,10,055	1,03,460	— 6,595
	„ age	36,326	38,268	+ 1,942
	„ other diseases	1,44,926	1,86,197	+ 41,271
Accidental	„ drowning	4,077	4,059	— 18
	„ snake-bite	1,810	2,344	+ 534
	„ wild beasts	334	288	— 46
	„ other accidents	1,645	1,827	+ 182
Suicidal	„ by hanging	186	215	+ 29
	„ drowning	301	249	— 52
	„ poison	39	41	+ 2
	„ other suicides	72	87	+ 15
Murders	„ murders	135	160	+ 25

The general increased numbers is attributed to more accurate registration.

The registration of births and deaths in the city of Madras had improved, but was still very incomplete as regards the births (only 4,751 entries among a supposed population of 450,000). Measures were in active preparation for taking a census. The total deaths reported in 1868 amounted to 12,202.

City of Madras. Census. Deaths.

Race.	Supposed Population.	Actual Deaths in 1868.	Per Mille Rate to Population.	
			1868.	1867.
Europeans and Eurasians	17,219	116 / 357 = 473	27·4	28·8
Mahomedans	67,205	1,596	23·7	26·5
Hindoos	365,576	10,133	27·7	27·2
Total population	450,000	12,202	27·1	27·2

The deaths among the different sexes are shown for each race. In the absence of a census showing the numbers of different sexes of each race, it is impossible to specify the per mille rate of mortality to population.

	Males.	Females.	Rate of Mortality.
Europeans	86	30	$2\frac{13}{15}$ males to 1 female.
Eurasians	174	183	1 male to $1\frac{3}{58}$ females.
Mahomedans	822	774	$1\frac{8}{129}$ males to 1 female.
Hindoos	5,135	4,998	$1\frac{137}{4998}$ males to 1 female.

The excessive preponderance of deaths among male Europeans, in comparison with females of the same race is due, no doubt, to the greater facilities for sick women being sent to sanitaria or to England, while European men obtain leave of absence with difficulty, and lead a life of harder work and greater exposure.

A special report on the deaths in Madras during 1868, giving full details, was submitted by the Sanitary Commissioner.

Considerable increase was made to the Vaccination Department, and the small-pox epidemic gradually subsided, but not until it had proved widely fatal, especially among the East Indian community.

A comparison of the deaths from the principal diseases, during ten years, is given in the following table :—

TABLE showing the DEATHS in MADRAS for Ten Years ending 1868.

Diseases.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	Average of 10 years.	1868, as compared with ten years from 1859 to 1868 (inclusive).	
												In. crease.	De- crease.
Small-pox	473	245	655	1,033	112	173	44	103	623	799	426·0	373·0	—
Fevers	2,378	2,459	2,169	2,235	2,117	2,083	2,190	2,256	2,456	2,232	2257·5	—	25·5
Dysentery	939	1,326	1,353	1,171	1,240	1,103	1,159	1,318	1,420	1,019	1204·8	—	185·8
Diarrhœa	358	1,012	981	1,032	914	893	1,062	947	846	812	885·7	—	73·7
Cholera	1,082	2,580	2,776	3,635	1,684	574	944	2,984	614	13	1688·6	—	1675·6
Other Miasmatic	158	213	169	154	228	193	153	128	167	427	199·0	228·0	—
Total Miasmastic Diseases	5,388	7,835	8,103	9,260	6,295	5,019	5,552	7,736	6,126	5,302	6661·6	—	1359·6
„ Other Diseases	4,904	5,663	5,267	5,471	5,563	5,390	5,664	6,145	6,119	6,900	5708·6	1191·4	—
Total Deaths	10,292	13,498	13,370	14,731	11,858	10,409	11,216	13,881	12,245	12,202	12370·2	—	168·2
Per mille rate for population of	430,000	432,000	434,200	436,400	438,600	440,800	443,000	445,375	447,700	450,050	—	—	—
Annual death rate per mille from all causes.	23·9	31·2	30·7	33·7	27·03	23·6	25·3	31·1	27·3	27·1	—	—	—

The meteorological conditions of the year 1868 at Madras were, for the most part, of an ordinary and average character. Meteorology.

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Medical aid in towns and villages.

Civil hospitals.

Five new dispensaries were opened during the year, and a further development of these institutions is recommended as a means of the extension of European medical science.

The number of patients admitted within the walls have been 17,914, or 1,957 in excess of the in-patients during 1867. The out-patient list also shows a considerable increase, or from 271,483 to 280,800, a difference in favour of the year under report of 9,317.

These figures, in the aggregate, show that the institutions are daily acquiring the confidence of the people, and represent a considerable amount of relief of sickness and suffering. The proportion of deaths to cases treated in hospital is 7·3 per cent., or 1·1 below the average of last year.

All civil hospitals and institutions supported by Government had been recently brought under an organized system of registration of births and deaths.

PART III.

MISCELLANEOUS.

General.

An abstract is given of annual Sanitary Reports forwarded from every station of the army, and in compliance with the request contained in the despatch of the Secretary of State, No. 5, 11th March 1869, the Sanitary Commissioner proposes giving a detailed list of sanitary works and measures in progress at each station of the army in his subsequent annual reports.

The registration of births and deaths had devolved on the Municipal Commissioners.

Military.

Drainage of stations.

But little progress had been made, Bangalore was the only station for which a system of drainage had been proposed, though at many the surface drainage had been improved, and measures adopted for carrying off refuse waters from different buildings more efficiently.

The Army Sanitary Commission in reviewing the "Further Report upon the Dry Earth System" clearly threw the weight of their experience into the scale of sewerage by water carriage, and if sufficient supply of water could be obtained the Sanitary Commissioner was in favour of giving the system in its entirety a trial at Bangalore.

Water supply.

The water supply at Bangalore and Secunderabad (Trimulgherry) engaged attention during the year under report.

At Bangalore, after considerable expenditure upon the Ulsoor Lake project, the use of the water for domestic purposes, even after passing through the filter bed, had to be abandoned, and the purchase was sanctioned of certain wells which yielded good potable water for the use of the troops. At Trimulgherry sanction had recently been accorded to a scheme of water supply for the new barracks, water being raised by steam power from deep wells into high level closed reservoirs, and distributed by gravitation by pipes. Filters were to be associated with the closed reservoirs. In all other stations, except Fort St. George, water is raised and distributed in the old way by water carts or bheasties.

Analysis of water.

The Sanitary Commissioner represented the necessity of a more extended and systematic analysis of the waters used by troops, and recommended that selected medical officers should be appointed, who should adopt one uniform system of analysis in communication with the chemical examiner at the Presidency. This was approved by the professor of chemistry and by Government, and the necessary apparatus was sanctioned, to be procured from England.

Dry-earth conservancy.

The system had not been authoritatively introduced, but more or less efficiently carried out, was the recognized system adopted in barracks, hospitals, and lines of native regiments. It is in fact the only system possible in the large majority of stations in the Madras Presidency, where the water supply is scanty and precarious.

Sewerage by water carriage may be applied in some of the new stations where the barracks and subsidiary buildings are located within a moderate area, but could not be applied to officer's homes, and cantonments at large, scattered over an area of many square miles of ground.

Accommodation of troops.

Steady progress was being made in the provision of accommodation for troops upon the standard plan. At Bangalore the buildings were approaching completion.

Venereal disease.

The rules and regulation of Act I., 1866 (Military Cantonment Act), had become law in all military stations garrisoned by Madras troops. Additions were made during 1868 to chapter V. of the Act regarding the control of brothels. Under clause 4 registration and inspection is made applicable only to women frequented by Europeans. The Sanitary Inspector strongly urges that these rules should be extended to prostitutes of every denomination. The Inspector-General writes: "The "working of the hospitals themselves seems to be very satisfactory, but the means "available for the detention of diseased women are still defective, and in stations "where Act XXII. of 1864 has been brought into operation, many difficulties have "been experienced in carrying out its provisions. It will necessarily be a work of "time to overcome these."

The following table shows the admissions for two years among the European troops. The Inspector-General remarks that the table "shows a decrease in the number "of admissions from venereal and gonorrhœal affections among European troops, at "stations where lock hospitals exist; but an increase in the per-centage of admis-"sions to strength; that per-centage being, within a fraction, the same in 1868 as "it was in 1866. This increase is due exclusively to three stations, viz., Banga-"lore, Secunderabad, and Wellington. At all the others there is a decrease in the "per-centage of admissions to strength, as also (with the exception of Saint Thomas' "Mount) in the actual number of admissions."

TABLE of ADMISSIONS from VENEREAL AFFECTIONS among EUROPEAN TROOPS in the following STATIONS where LOCK HOSPITALS exist.

Stations.	1867.			1868.		
	Strength.	Admitted.	Per-centage of Admissions to Strength.	Strength.	Admitted.	Per-centage of Admissions to Strength.
Bangalore - - -	1,745	199	11·40	1,673	341	20·38
Bellary - - -	793	241	30·39	569	157	27·59
Cannanore - - -	647	110	17·0	666	74	11·11
Kamptee - - -	1,060	272	25·66	887	209	23·56
Saint Thomas' Mount -	453	178	39·29	426	158	37·08
Secunderabad - -	2,798	356	12·72	2,089	374	17·90
Trichinopoly - -	212	87	41·03	219	77	35·15
Wellington - - -	371	50	13·47	247	63	25·50
Total - -	8,079	1,493	18·40	6,776	1,453	21·44

New military hospital for British troops at Madras.

This question remained in *statu quo*. Committees had examined and reported upon all the sites available, but final orders had not been issued.

Sanitaria.

The establishment of a new marine sanitarium at Ennore, 10 miles north of Madras, was projected and approved by Government in June 1868.

The present depôt at Poonamallee has been pronounced to be the worst barracks in India assigned to European troops. The matter had been reported on, and was still under consideration.

The selection of a sanitarium for troops in British Burmah had further engaged the attention of Government during the year.

Report on sanitary works in the Presidency.

In compliance with orders founded on the despatch from the Secretary of State, No. 14, 23rd April 1868, the Sanitary Commissioner submitted, 31st October 1868, reports both in the civil and military departments on sanitary works in the Madras Presidency.

Conservancy of Fort St. George.

Additional latrines were recommended, on the dry earth system. The matter was referred to the Sanitary Commissioner with the Government of India, who considered expense might be saved by simply erecting the latrines over the ditches and moats of the fort, as at Calcutta. There, however, a tidal river flows by the

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fort. Fort St. George has no such advantage. Surgeon-Major Rankin considered the conditions of the two forts to be quite dissimilar, but that McDougall's powder might be used in the urinaries instead of dry earth as more economical. There the matter rested; but it seemed necessary something should be done promptly to improve the conservancy of Fort St. George, which has for years shown very high average sick and death rates.

Hammocks.

Major McGuire's new field hammock was favourably reported upon, but there seemed some difficulty in adapting it to the ordinary tents for Europeans.

Overcrowding of the transport ship "Challenge."

Early in January the transport "Challenge" arrived from Calcutta with some of Hodson's horse, bound for Abyssinia. There were some cases of cholera on board. A board of medical officers reported that "cholera had actually appeared before the "vessel left Calcutta, but that the overcrowded state of lower deck and the insuffi- "ciency of lateral ventilation constituted insanitary conditions most favourable to "the continuance and spread of the disease."

The vessel was taken to Ennore, and the troops disembarked and encamped until the disease disappeared.

Allotment of space for healthy and invalid soldiers on board Indian coasting steamers.

With reference to the foregoing paragraph, the subjoined rules are proposed, in modification of those previously existing regarding the amount of superficial space to be allotted to healthy or invalid soldiers, and to women and children of different ages.

The following are the rules proposed by Sir Robert Napier, K.C.B., G.C.S.I., (now Lord Napier of Magdala), and approved by the Government of India:—

RULES.

I. "When European troops are embarked on board Indian coasting steamers, in which it is possible to carry out the regulation, that one-third the number of men in health shall always be on watch on the upper deck, $7\frac{1}{2}$ superficial feet per man in health will be sufficient. But, in cases where the system of watches may not be practicable, each man in health will have a space of 12 superficial feet allotted to him.

II. "Invalids, men sick, and women embarked on board such steamers are to have 15 superficial feet each, and children under 10 years $7\frac{1}{2}$ feet, children above 10 years same as adults.

III. "Should the constituted medical authority deem the full space of 22 feet requisite for cases of extreme sickness, it should be provided.

IV. "The best parts of the ship are to be appropriated for the sick generally, and effective men should not be allowed to occupy any of the space allotted to the sick.

V. "A cabin or screened berth is to be set apart for use as a dispensary; an area of 22 square feet will suffice."

Purification of barracks or huts of native troops in which cases of cholera may have occurred.

The following rules for the purification of barracks occupied by Native troops, in which cases of cholera may have occurred, at the expense of the State, have received the sanction of the Government of India:—"Every hut or building in which a case "of the disease occurs, or which there is reason to suspect may have been contami- "nated by cholera discharges, shall at once be fumigated by sulphurous acid (the "fumes of burning sulphur), the floor to the depth of six inches shall be dug up, "the old earth buried, and fresh earth be placed in it. The inside of the roof shall "be washed over with a solution of MacDougall's powder, or other disinfectant, and "the walls smeared with fresh mud (leeped). Where the floor is not earthen, but "of brick or other permanent construction, it should not be dug up, but washed "with some disinfectant. It is not considered necessary that the whole of the "buildings occupied by the troops should be subjected to the process of disinfection, "but only those individual huts or barracks which appear likely to retain the germs "of the disease."

Space in tents.

After correspondence with the Government of India, the number of Native infantry soldiers was reduced from 25 to 20 per tent, with an allowance of 11·13 superficial feet instead of 8·9.

Application of cantonment rules under Act I., 1866, (Madras).

An important question was raised by the Commander-in-Chief bearing on the sanitary administration of cantonments also located within the limits of municipalities, working under Madras Act X. of 1865.

His Excellency the Commander-in-Chief represented to Government, under date the 26th October 1868, that if the conservancy and general sanitary conditions, &c.,

of a cantonment are to be left entirely under the control of the local Municipality, the military authorities must be relieved from all responsibility in regard to such matters, and will not be in a position to remedy anything amiss, and that he himself could, moreover, have no authority to issue instructions for the carrying out of any measures which he might consider conducive to the public health, and that it was by no means certain that his Excellency's opinion on such questions would be respected by, or have any weight with, the Municipal Commissioners, or that his proposals would even be entertained by that board. His Excellency in forcible language pointed out the impolicy of removing the sanitary administration of military cantonments from direct military control, and expressed his regret that they were ever brought within the limits, or under the jurisdiction of local Municipalities. The matter was referred for the opinion of the Judge Advocate-General, who suggested two measures for consideration in solution of the difficulty.

The first was to admit of the members of the Municipal Commission becoming also members of the cantonment committee under Act I. of 1866; the second, to separate cantonments from municipal towns, apportioning the funds created to each working distinct, but for similar ends.

The Government in their order upon a review of the whole question, and in reference to the strongly expressed views of Lieutenant-General McCleverty, and to the reiterated views of the Government of India for the adoption of a uniform code of rules for all cantonments, were pleased to direct that the cantonments be separated from the municipal limits of the adjacent towns, and that the cantonment rules, contained in chapters I. to V. of Act I. of 1866, be made applicable to those cantonments.

This decision led to a reference upon the subject by the military and municipal authorities at Trichinopoly, who represented that the two authorities had worked harmoniously to the manifest welfare of the cantonment, and deprecated a change; as under the separation, the military cantonment would be left without funds to continue the excellent system of conservancy in operation.

The Government was pleased in consequence to hold their order in abeyance, in view to further consideration of the question.

The Sanitary Commissioner considered that the difficulties of the case were sufficiently provided for under the Military Cantonment Act. By the rules drawn up under section 17, it is competent to "lawful authority," the Government, to assign such portion of the proceeds of any taxes levied by the Municipality, as they may judge sufficient to meet the requirements of the cantonment in the department of the conservancy, and, indeed, in other matters, referred to in Rule 11, leaving the executive to the cantonment committee. The municipal committee under the operation of this law raise and collect the taxes, and make over to the cantonment committee such share of the proceeds as the Government may consider proper. In this way the authority of His Excellency the Commander-in-Chief can be kept supreme, at the same time that the interests of the cantonment will not suffer from want of funds.

Civil.

Sanitary progress throughout the country generally.

Progress was being made in measures calculated to advance the sanitary condition of the people at large. This progress had been mainly confined to the larger towns, which had come under the operation of the Municipal Act X. of 1865. In these towns very material advance had been made. Efforts were at first directed to the more urgent requirements, especially to surface cleanliness and water-supply; but, as funds became available, sanitary works, involving more or less considerable outlay of municipal funds, were undertaken in many instances. It would occupy too much space to account for the progress made in each Municipality; in works and measures of sanitary improvement much, however, had been accomplished. A system of removal of all refuse and filth from streets and dwellings had been more or less efficiently enforced; surface drainage improved; public latrines substituted for the system of open air privies, which was simply defilement of every waste spot within easy access; sources of water-supply inspected and set apart for different purposes, the purest being kept for domestic use. In some towns old dilapidated walls of disused fortifications had been thrown down, and the moats or ditches, always a source of miasma from stagnant water and accumulated filth, filled in as funds have permitted. Streets have been widened, blind alleys opened out, and ventilation improved; periodical

MADRAS. white-washing of houses enforced; special purification and disinfection insisted upon in houses in which deaths from infectious diseases have occurred, &c., &c. In fact, under the energetic action of the different Municipal Commissions, towns were, in a sanitary point of view, becoming renovated; while the people themselves, prejudiced as they were against works of sanitary improvement, are gradually being educated to believe in the benefits that result from attention to simple sanitary laws.

The question of the organization of a sanitary service for the smaller towns and villages was under consideration. In October 1868 the Sanitary Commissioner submitted a report containing a scheme for carrying out, which he recommended a special cess.

The scheme briefly is as follows :—That there be appointed 4 Inspectors of public health and 19 District Officers of health, with a staff of Inspectors of nuisances, the latter to be in charge of groups of villages; the number for each district to be fixed in communication with collectors. A special Sanitary engineer, as suggested by the Right Honourable the Governor, also forms one of the officers to be entertained under the scheme.

It was further proposed that Lord Napier's scheme of developing the various civil dispensaries, so as to make them schools of instruction for the rising generation of native practitioners in medicine, should be carried out; and that Native Hakeems should be educated to the joint duties of Medical practitioners and Sanitary Inspectors, or Village health officers, so as to carry to the rural districts the benefits both of remedial and preventive medicine.

The Sanitary Commissioner pointed out that an annual cess of 1½ annas per house would, by the last census returns, yield 5,47,162 rupees, or 3,22,462 rupees in excess of the cost of the establishment under the public health service suggested, (which would reach about 2,24,700 rupees per annum) leaving a large margin for executive agency.

Fairs and festivals. A series of regulations for the better management and conservancy of fairs and festivals was submitted to Government in July 1868, and was approved. These assemblages had passed off without any occurrence of epidemic disease during the year under review.

Contagious Diseases Act, and Lock hospitals in Madras. The Act came into force on the 15th of October 1868, and at the close of the official year 1868–9, the number of registered women stood at 779; 733 of whom were natives, 41 East Indians, and 5 Europeans. Of these 582 had come under treatment, viz., 539 natives, 38 East Indians, and 5 Europeans. The extension of this Act to other towns has been recommended as to Rangoon and Nagpore.

The Hospital in Popham's Broadway was declared a lock hospital under the Act, and rules for the registration and inspection of all registered prostitutes, for the inspection and control of brothels, and for the medical examination of women and their treatment in hospital, were submitted and approved.

Mauritius emigration depôt. The Depôt was re-opened and enlarged. Every provision was made for the comfort of the emigrants, and every precaution taken against the introduction of epidemic disease.

Lunatic asylum. Progress had been made in the Presidency Lunatic Asylum, and rules for its superintendence and management were sanctioned.

Quarantine in Red Sea. Notification was published that no vessel would be allowed to leave any port in Madras without clean bills of health; and that vessels bringing into the ports of the Red Sea passengers in excess of the number allowed to be carried under sections 1 and 10 of Act XXI. of 1858, would be dealt with by the authorities as having infringed the law, and that to prevent misconception or misunderstanding copies of the correspondence would be sent to the Superintendents of marine and to Collectors of maritime districts for distribution to masters of ships arriving at ports in this Presidency.

The island of Cameran, near Hodeida, had been chosen as the quarantine station.

General conservancy of Madras. The disposal of the night soil and rubbish of the city still continued a problem difficult of solution. The system of burial of the filth on the outskirts of the city was still carried on; and although the operation was conducted upon better principles than formerly, inasmuch as that the filth was incorporated with, and covered over by, a thick layer of earth, still the process cannot be indefinitely prolonged. It must soon be put a stop to, or the environs of the city will become encircled with cess-pits. One piece of ground after another had been taken up. A cinerator was erected after

great delay and at considerable cost, and is only a partial success. Captain Tulloch's drainage scheme appeared as much in the future as when it was first projected.

Utilization of sewage.

An experiment had been commenced to utilize two streams of sewage upon a plot of waste land upon the outskirts of the town. Formerly these streams spread themselves out into pools, or sank into the ground. Now they are utilized under intelligent agency, and the experiment could scarcely fail to prove a success.

Noxious trades.

A site had been selected in which tanneries and other noxious trades were to be deposited, the new settlement being drained and kept under suitable sanitary regulations at the expense of the Municipality.

The "Suggestions in regard to Sanitary Works for improving Indian Stations," compiled by the Barrack and Hospital Improvement Committee, was reprinted and generally circulated.

The military stations of Kamptee and Trichinopoly, also certain of the central jails, were inspected and specially reported upon.

(Signed) T. L. RANKING,
Sanitary Commissioner for Madras.

ABSTRACT OF ADMINISTRATION REPORT OF THE MADRAS MUNICIPALITY FOR 1868.

The Report bears date 4th March 1869, and is submitted by Colonel Charles A. Denison, President of the Municipal Commission.

The Budget Estimate for Receipts and Expenditure for 1868 was sanctioned by Government on the 11th of February. A schedule of fees for licences and registrations was approved by Government on the 26th March, and the byelaws, under Act. IX., 1867, with certain alterations and remarks, were confirmed by Government after publication in the "Fort St. George Gazette," for one month, on the 22d July 1868, No. 890.

Assistant engineer.

As the amount of work and supervision was more than could be expected from one person, Mr. Stephenson was selected as assistant to the executive engineer, on a salary of 200 rupees per mensem.

Double licence tax.

The question of a double licence tax on professions and callings, one for local and one for imperial purposes, the Commissioners considered highly inexpedient, and proposed to relinquish the local tax; and in lieu thereof proposed that wholesale dealers in liquor should be obliged to take out licences the same as retail dealers.

Government concurred in these views, but doubted the latter proposal making up for the amount relinquished; suggesting the propriety of raising the rate on houses, buildings, and lands to 10 per cent., the maximum authorized by the Municipal Act of 1867. This proposal the Commissioners objected to, upon which the Government did not object to the maintenance of the licence tax, leaving the proposal of levying a tax on wholesale dealers in liquor for future consideration.

Rates, tolls, and taxes for 1869.

The rates, tolls, and taxes to be levied under Act IX. of 1867 for 1869 were considered and sanctioned, subject to the approval of Government, at an adjourned general meeting of the Municipal Commissioners, held on 9th December 1868, and were so approved on 15th idem as follows:—

1st. A tax on carriages, horses, and other animals, as provided in sections 36 to 43, and Schedule A. of Act IX. of 1867.

2nd. A tax on carts and other wheeled vehicles without springs, as provided in sections 45 to 47.

3rd. Tolls on carriages and animals entering the municipal limits, as provided in sections 49 to 55 and schedule B. of the said Act.

4th. A tax on professions, trades, or callings, and liquor licences, as provided in sections 57 to 62 and schedule C. and C 2. respectively of the said Act.

5th. A rate of $7\frac{1}{2}$ per cent. on the annual value of all houses, buildings, and lands, as provided in sections 69 to 82.

Receipts and expenditure in 1868.

The following statement shows the collections of rates, tolls, and taxes during 1868 as compared with the Budget Estimates, and the Municipal Commissioner regrets to add that, with the exception of the house and land rate and tolls, they all fall far below the estimated amount. The circumstance, however, of the realized amount of tolls being short by Rs. 457 of the Budget Estimate, which was based upon the amount for which the tolls were farmed, is owing to the realized amount containing in it the instalment for December 1867 of the amount for which the tolls were farmed for the last-mentioned year, and excluding the instalment for December 1868, which was not brought into the municipal accounts till January 1869.

Collections of Rates, Tolls, and Taxes during 1868.	Budget Estimate.			Revenues and Receipts as per Books.		
	RS.	A.	P.	RS.	A.	P.
House and land rates - - -	2,50,000	0	0	2,60,663	12	5
Tax on professions and callings—arrears under Act IX. of 1865.	1,50,000	0	0	50,617	11	1
Tax on professions and callings—current under Act IX. of 1867.	1,40,000	0	0	83,907	0	0
Liquor licence - - - -	15,000	0	0	11,057	0	0
Carriage licence - - - -	55,000	0	0	45,065	8	0
Cart registration - - - -	12,000	0	0	11,822	2	10
Tolls - - - - -	48,000	0	0	47,543	0	0
TOTAL - -	6,70,000	0	0	5,10,676	2	4

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The total collections were Rs. 5,10,676 2 4, against Rs. 6,70,000 estimated in budget.

The other items of receipts were as follows :—

	RS.	A.	P.
Government contribution for maintenance of roads	35,000	0	0
Rents of market stalls	5,646	8	0
Fees of slaughter-houses	5,659	6	9
Strand rents	1,817	12	10
Fees for licences granted for offensive and dangerous trades	4,406	10	1
Grazing grounds	2,872	4	7
Proceeds of rubbish sales	885	2	2
Do. of hay of the People's Park	1,037	11	0
Fines by police magistrates and levied on contractors and subordinates.	2,430	15	0
Interest on Government promissory notes	1,488	4	4
Sundry fees, &c.	4,732	3	6
Lamp-posts, &c., sold to Mofussil Municipalities	2,007	7	5
Sale of building materials	1,309	4	6
Sale of land	3,187	10	8
TOTAL	72,481	4	10

And the grand total under all heads, Rs. 583,157 7 2, against Rs. 737,388 entered in the budget.

The greatest falling off was in the tax on professions and callings under Act IX., 1865, amounting to close upon a lac of rupees.

The expenditure during the year 1868 is shown in the following statement as compared with the Budget Estimates.

Disbursements.	Sanctioned Grants with subsequent Additions.			Expenditure as per Books.		
	RS.	A.	P.	RS.	A.	P.
New works and improvements	72,980	0	0	35,603	14	6
Repairs	1,14,500	0	0	73,534	13	3
Conservancy	1,76,846	0	0	1,70,202	3	4
Lighting	31,000	0	0	24,281	0	7
Establishment and charges	94,462	0	0	92,519	1	2
Contribution to police	1,07,232	0	0	1,07,232	0	0
People's Park	17,390	0	0	18,222	12	3
Other disbursements	—			13,332	0	10
Total	6,14,410	0	0	5,34,928	7	11

Roads.

The chief saving is in roads, from strict and laborious supervision, and careful consideration of repair estimates. The quantity of work performed in 1868 was 48,083 squares at an outlay of Rs. 64,926, contrasted with Rs. 123,163 on 52,731 squares of road work in 1866. With increasing traffic and wear recourse must ere long be had to granite, notwithstanding its higher cost.

The total extent of metalled road kept in repair was 152 miles, and the total expenditure was 64,926*l.* 5*s.* 9*d.* or Rs. 1,777 9 4 a mile, against Rs. 2,360 in former years. Fourteen streets were newly metalled, and nine streets were widened, raised, and extended during the year under review (1868).

Water supply.

This important subject had at length assumed a tangible shape, a well devised and comparatively cheap scheme having been prepared by the engineer under the orders of a Committee with Colonel Silver as Chairman, which scheme was approved by the local government and forwarded to the Government of India, with a recommendation that the requisite funds, Rs. 12,80,000 should be raised by a 6 per cent. loan, of which 2 per cent. is to form a sinking fund.

The leading features of this scheme are as follows : " The water is to be drawn " off the storage reservoir at the Red Hills, at a level sufficiently elevated to com- " mand nearly the whole of Madras. It is to be conducted for a distance of six " miles in an open channel, partly through cutting and partly by an embankment. " The delivery channel will enter Municipal limits from the north-west and terminate " in a masonry shaft at Modumbakum, and from this point iron pipes will be laid

" to 137 fountains in all the principal streets. The supply will be constant and the " delivery taps will be generally a few feet above the ground; there are, however, " one or two localities so much elevated as to necessitate the use of dip wells."

In March 1869 the Supreme Government sanctioned an expenditure of 13 lakhs.

Drainage.

This much vexed question was still in abeyance. Captain Tulloch, who was sent by this Government to England and the Continent to study the best systems of drainage in use there, returned to India, but was ordered to visit Bombay on his way to Madras to consider the best means of draining in that city, and was there still, so when Madras was to have the benefit of his services was very uncertain, and how the necessary funds for reconstructing the drainage of this city were to be raised was even more doubtful, but it was hoped that the Government would treat it as an imperial, or at all events, not a purely municipal question; for it is incumbent upon the State to assist in ridding the second Presidency Town in India of its long standing reproach, and save its garrison and the public as far as possible from outbreaks of cholera and other dire diseases, which are in a great measure caused by foul gases and polluted water.

Of the 10,000 rupees sanctioned in the Budget for 1868 for repair and re-construction of drains, only Rs. 5,358 9 7 were expended during the year.

The disposal of the sewage from the Perambore Lines was the subject of frequent correspondence and communication with the authorities last year, and resulted in Government sanctioning a lage estimate for its conveyance to the swamp near the powder mills; with this was eventually combined the drainage of the Cosapet nullah, which was in a very filthy state, at an outlay of Rs. 1,340, half of which is borne by Government; the work is now in progress, and already has resulted in a marked improvement of the nullah.

Additional reason for immediate action.

If it is necessary to adduce an additional reason for the immediate sewerage of Madras on a proper system, the fact of the water supply being about to be commenced is a very powerful one.

Evils of water supply in the absence of proper sewerage.

Whenever an artificial supply of water is conveyed into a town which previously has been supplied from wells, it is found that without efficient drainage the healthiness of the place, instead of being improved by an abundant supply of water, is injured. The constant drawing from the wells of a town tend to promote the dryness of the soil, and when this is discontinued, dampness with all its evils is brought into play, which is augmented by the additional supply of water.

Latrines.

A grant of Rs. 30,000 was made for improving the Public Latrines, but after several experiments at an outlay of Rs. 1,425 9 3, it was found that the natives would not follow the simplest rules to ensure cleanliness and decency. The old system of constant service and daily sanding of the floors was reverted to, and was found to answer remarkably well, and to suit the habits of the natives.

Rubbish depôts.

By unremitting attention, in spite of past difficulties to be contended with, the executive officers had so far succeeded as to prevent the depôts from continuing to be the crying nuisances to the neighbourhood they were formerly.

System of treating street sweepings.

An improved system was introduced in 1867 and carried out so successfully in 1868, that the rubbish depôts are at present cleaner, and smell sweeter, than a great number of streets themselves: European supervision has never appeared to greater advantage than at those depôts. The system now adopted is simply to shoot the rubbish from a bank about 15 feet high, until it is heaped up to a level with the bank, when it is covered over with two feet of earth. This method for the disposal of sweepings possesses certain advantages over the trenching and burying system. The mound being well raised above the ground, a few catch-water drains are all that is required to drain it effectually, and as no moisture is allowed to penetrate into the mass below, poison is not carried to the well springs in the neighbourhood.

The quantity of sweepings to be removed daily is enormous, on an average 720 cartloads, which, at a moderate estimation, represents upwards of 300 tons.

Cinerator.

Owing to press of business, the Executive Engineer had only just matured a plan for a cinerator large enough to consume the sweepings of a whole district, by the close of the year under report. In the event of success, which was fully expected, the commissioners proposed the erection of further cinerators in each division of the town. Garbage carts, instead of travelling long distances on public roads, will make short trips to cinerators which will be established in each suburb, and there deposit their loads direct into the burning chamber to be converted into ashes in a few hours.

MADRAS.

Lighting.

Colonel Denison regrets that there is no immediate prospect of Madras being lighted with gas, the promoters of the Company that were in communication with Government having made no sign since their proposals were shelved in 1867. The great obstacle is the straggling nature of the city with more than 150 miles of road running in every direction, which would entail an enormous outlay for mains, even supposing it were lighted in sections with gasometers in each.

Some progress had been made in lighting different bridges and thoroughfares with kerosine oil, and the number of oil lamps had been greatly increased.

Public wells.

Seven new wells were sunk during 1868, and 17 old ones repaired at an outlay of only Rs. 1,140 11 4.

Conservancy.

The re-organization of the Sanitary Department had progressed satisfactorily during the past year, and the out-door establishment had been brought under closer supervision; 135 new rubbish carts of improved pattern had been brought into use, together with 61 sewage and latrine carts, and 3 trollies.

The strength of the out-door establishment in 1868 was 3 inspectors, 26 overseers, 61 duffadars and peons, 732 sweepers and sewage coolies; total, 882. The number of carts in use was 259.

The expenditure as compared with that for 1867 was as follows:

——	In 1868.			In 1867.			Remarks.
	RS.	A.	P.	RS.	A.	P.	
Establishment	60,484	15	4	46,672	3	6	
Hire of bullocks and drivers	64,206	1	10	*26,729	0	6	*Plus* Rs. 6,735 2 0, charged under head of Advances, but since transferred to this head, and also Rs. 9,608 2 0 kept in suspense, owing to the contractor's refusal to receive the hire from August to December at the contract rate.
Land purchased for cart and rubbish depôts.	—			2,855	9	9	
Construction and repair of carts	29,332	8	10	2,605	3	1	
Do. of dust boxes	—			2,335	1	3	
Cutting trenches for burying rubbish	4,141	5	1	2,206	8	3	
Cleaning drains, &c.	1,802	9	8	1,838	1	5	
Sanding latrines	464	6	8	1,442	7	8	
Repair of boats	—			504	0	0	
Registration of births and deaths	4,483	11	2	—			
Slaughtering dogs	360	7	10	—			
Cart sheds	1,558	1	1	156	7	2	
Rubbish depôts	703	11	9	—			
Miscellaneous	1,222	4	0	3,975	9	6	
	1,68,759	15	5	91,320	14	1	

The total increase being Rs. 77,439 1 4.

Offensive and dangerous trades.

Much opposition had been raised to the removal of these places, especially tanneries, from the neighbourhood of dwellings; but after personal inspection by the Sanitary Commissioner and his Secretary, the measure was considered to be absolutely necessary, fair compensation being granted to the parties interested, and sufficient time being allowed for removal. The Government further suggested that the Commissioners should select suitable sites to which these trades might be removed.

General market.

No further progress had been made in the erection of a new general market at Madras. Of the 29 private markets 10 had been reconstructed in conformity with the requirements of the byelaws, and others were under improvement.

Registration of births and deaths.

The new system had not worked satisfactorily, and was to undergo revision at the hands of Dr. Montgomery, the indefatigable secretary to the Sanitary Commissioner.

Public health.

The Public Health had not been so favourable as could be wished, and the ravages of small-pox were very severe; happily the city was free from cholera (only 13 deaths). The total mortality was 12,202, against 12,245 in 1867, and 12,709 the average of the previous seven years.

Census.

An item of Rs. 12,500 was entered in the Municipal Budget for 1869, as the moiety of the probable cost of obtaining a correct enumeration of the population of Madras, and Government was asked to contribute the other half. Colonel Denison considered it most important that the services of Dr. Montgomery should be placed at the disposal of the Commmissioners for carrying out the work.

Note.—Statistics of small-pox and other diseases do not appear in the Report.

MAP

SHOWING THE MORTALITY

FROM

CHOLERA

IN THE

DISTRICTS OF THE BOMBAY PRESIDENCY

IN THE YEAR

1868.

Scale, 1 Inch to 32 Miles.

0 8 16 24 32 64 96 128 160 Miles

MORTALITY FROM CHOLERA IN 1868.

No I	indicates	1	to 5	Deaths.
No II	do	5	to 20	do.
No III	do	20	to 50	do.
No IV	do	50	to 100	do.
No V	do	100	to 200	do.
No VI	do	200	and upwards.	

N.B. The Arabic Numerals represent the Number of Deaths during the Year in the Talooka.

The Roman Numerals denote the Position of the Talooka in the graduated Scale of Intensity.

(Signed) H.W.B. Bell.
Colonel, R.E.
Sanitary Commissioner.

Vincent Brookes Day & Son Lith.

ABSTRACT OF REPORT OF THE SANITARY COMMISSIONER FOR BOMBAY, FOR THE YEAR 1868.

PREFATORY.

BOMBAY.

Mr. LEITH retired from the 31st December 1867, and Colonel Bell, R.E., who had n in charge of the office, was appointed Sanitary Commissioner for Bombay from 1st January 1868.

Early in the year intimation was received that "a Sanitary Department had been stituted at the India Office, London, in which all propositions relative to public ealth, civil and military, would be considered, and to which they should be *parately** reported."

concise report on progress made in sanitary improvement, with special reference Suggestions in regard to sanitary works required for improving Indian stations," he Barrack and Hospital Improvement Commission, was required by the Secre- of State in despatch dated 23rd April 1868, No. 14, addressed to the Government India. The Sanitary Commissioner forwards a report in compliance with this uest (see page 175), but considers that many of the points in the "sugges- s" specified by the Secretary of State refer to inspections and arrangements ch pertain peculiarly to the medical department and not to that of general itation.

The station of Belgaum was visited and specially reported upon.

SECTION I.

EUROPEAN TROOPS.

Barracks.

The subject of building barracks on vaulted basements, also a proposition to substitute wood and iron for masonry work in the veranda walls of new barracks, and the necessity of the ponderous stone floors, proposed at a great increase of cost for barrack buildings, came under discussion during the year. With reference to the last question, Government recorded an opinion that properly constructed plank floors would answer the purpose and save much outlay, and that slate might be used with advantage and with greater economy than stone.

The question of the necessity of air shafts in two-storied barracks was postponed for the decision of Lord Napier.

It was considered desirable that each barrack should have its own special out-buildings, for the use of its occupants only, and that covered ways of communication should be provided, especially between the barrack and its latrine, which it was proposed to retire centrally 90 feet. It was also considered that outbuildings should have positions in the rear of the barracks to which they pertained, as being less obstructive to perflation and more easily accessible.

Day-room.

A day room was provided in the family quarters at Bangalore, but little resorted to by the married women.

* This request was repeated in Sanitary Despatches No. 9 of 1868, and No. 16 of 1869, but hitherto not a single communication has been received from the Governments of Madras or Bombay addressed direct to the Sanitary Department. The despatches on sanitary subjects are addressed generally either to the Military or Public Departments, and have then to be transferred, which causes unnecessary delay and trouble.

BOMBAY.

Lighting.

In Bombay the lighting of barracks and hospitals is still effected by means of lamps burning common cocoa nut oil, and is not satisfactory.

STATISTICAL.

Changes in strength.

The strength of the European army serving in the Bombay Presidency on the 1st January 1869 was 10,022; a number less by from 3,000 to 4,000 than the numbers on the corresponding periods of the four preceding years.

The explanation of the great difference is that several regiments withdrawn for the army in Abyssinia did not return to the Presidency on the conclusion of the war, and that the relieving regiments had not arrived by the end of the year.

The Adjutant-General's return embraces a gross total of 16,205 "effectives," from which has to be deducted 5,681 men removed by causes other than those pertaining to health.

Out of the remaining 10,524 (rank and file) the loss within the year amounted—

By invaliding to 65·9 per mille, and
By death to 15·6 ,,

showing a proportion—

Of invaliding 5 per mille greater, and
Of mortality 1 ,, less

than in 1867.

Marriage.

On the 1st May 1868, 10·85 per cent. of all grades and all arms were married; of the rank and file only 7·42 per cent. This latter ratio, however, shows an increase of nearly 2 per cent. on the ratio of married men as existing on the 1st May 1864, in which year, it is to be noted, the subsistence money for a wife was raised from Rs. 5 to Rs. 8 a month.

The per-centage of married men were among the rank and file of—

The Artillery	-	-	8·36
The Infantry	-	-	8·27
The Cavalry	-	-	6·16

It varied from 14·2 in the C battery, 18th brigade of Artillery, to 4·2 in the 2nd Dragoon Guards.

Daily strength. Sickness.

The mean strength of men serving with their corps or regiments in the Bombay Presidency during 1868 was 9,691. Of these, the average number daily under treatment was 482; giving the daily proportion of 49·7 per mille. The total admissions into hospital amounted to 11,125, or 1,147·9 per mille. The maximum of admissions was in July 130 per mille; the minimum in November 66·5 per mille. Compared with the previous four years these returns are favourable.

The comparative statement of sickness in the three branches of the service exhibits a much higher ratio, especially of admissions from fever, among the men of the Artillery than among those of the Cavalry or Infantry.

It is known that the duties of the Artillery are more severe than those of the Infantry, and it has frequently been represented that their clothing is not always suited to the climate in which they are serving.

It is understood that the latter inconvenience is about to be removed by the provision of serge clothing, such as has been long in use in the Infantry.

The most unhealthy corps in the Artillery were the 5th Company 5th Brigade at Poona, and the B. Battery E. Brigade at Ahmednuggur and Kirkee.

The healthiest were the D. Battery 18th Brigade at Kirkee and the F. Battery 14th Brigade at Nusseerabad.

Among the Infantry the most unhealthy regiment was the 46th Regiment at Poona, and the healthiest the 1–2nd Regiment at Aden and Hydrabad.

The period of foreign service of the 46th Regiment was almost completed; that of the 1–2nd Regiment in its beginning.

Mortality.

Out of the number 9,691 representing the mean strength of men with their corps there died 135, which is in the proportion of nearly 13 per mille.

The rate of mortality for the year 1863 (12·03 per mille) is the lowest that has been attained in the Bombay army; the rate for the year 1866 (12·7 per mille) closely approaches it, and that for the year under review is only a little higher.

Twenty-three of the 135 deaths in 1868 had been occasioned by violence or accident.

Eight of the deaths were occasioned by cholera, and of these seven occurred among men of the Artillery, which arm of the service afforded all the cases, with one exception, of this disease, which occurred among the British troops during the year.

This is probably an accidental occurrence; but after deducting 3·2 on account of cholera from the death-rate in the Artillery, that branch of the service is still exhibited as having suffered from death, as it had from sickness, most of all.

Causes of sickness.

Miasmatic disease continued to cause nearly 50 per cent. of total sickness; its prevalence, however, has steadily declined from a ratio of 802 per mille of strength in 1865 to 492 in 1868.

Venereal disease.

The only other order of disease which caused great sickness was the *enthetic;* 20 per cent. of the total sickness and 204 admissions to hospital out of every 1,000 men were due to it. These figures, however, show a small diminution compared with the preceding two years. Lock hospitals had been established at several stations, and favourably reported on at Neemuch. It was considered, however, that a satisfactory supervision of the women with which British soldiers consort had not yet been attained.

Cholera.

Cholera prevailed at some periods of the year widely among the civil population throughout the Presidency. Among British troops one case occurred at Ahmedabad, one at Hydrabad, one (fatal) at Poona, six (four fatal) at Kirkee, and four (three fatal) at Ahmednuggur. The district surrounding the last named station was primarily visited and severely ravaged by the disease in its epidemic form among the general population.

Fever.

Thirty-one per cent. of the sickness was due to fever, Sholapore affording the largest number of cases, where, out of an average strength of 116 men, there were 163 admissions from fever. At no other station was there proportionally half that number of cases.

The average rate of prevalence of fever has, however, steadily declined from 453 per mille in 1865 to 309 per mille in 1868.

Bowel affections.

Affections of the intestinal canal occasioned 7·4 per cent. of the sickness, and were most frequent at Ahmednuggur, Belgaum, Aden, Deolalee, and Nusseerabad.

Liver disease.

Neemuch, Sholapore, and Fusseerabad are the stations where liver disease was most common.

Intemperance.

Drunkenness was the cause in 1868, as in the preceding year, of numerous admissions to hospital, and the increase in both years was attributable to the same cause, viz., the distribution of much bounty money.

From the Temperance Return it appears that out of an average number of 9,164 men in the army—

1·7 per cent. were total abstainers.
87·1 „ „ temperate.
11·2 „ „ intemperate.

The following information is likewise deducible from the same source:—

Among the 157 total abstainers were 7·6 per cent. daily sick,* and no death in year.

Among 7,979 temperate were 3·7 per cent. daily sick, and 1·3 death-rate.

Among 1,028 intemperate were 5·3 per cent. daily sick, and 0·9 death-rate.

Among 1,118 drinkers of malt liquor only 4·2 per cent. daily sick, and 1·0 death-rate.

Among 7,889 drinkers of both malt liquor and spirits were 3·9 per cent. daily and 1·0 death rate.

Sickness and Mortality.

Years.	Mean Strength from Weekly Returns.	Admissions into Hospital.	Daily Sick from Hospital Diet.	Deaths in India.			Invalided, to be Discharged.	Ratio to Strength per Mille.				
				In Hospital.	Out of Hospital.	Total.		Admissions.	Daily Sick.	Deaths. In Hospital.	Deaths. All Deaths.	Invalids.
1864 - -	12,412	18,745	736	179	18	197	169	1,514	59·3	14·4	15·9	13·6
1865 - -	11,898	18,089	671	402	16	418	176	1,520	56·4	33·8	35·1	14·8
1866 - -	12,051	16,998	717	136	17	153	556	1,410	59·5	11·3	12·7	46·1
1867 - -	11,411	16,186	670	199	22	221	—	1,418·5	58·7	17·4	19·3	60·6
1868 - -	9,691	11,125	482	125	10	135	154	1,148·0	49·7	12·9	13·9	15·9

* This seems a case in which the conditions under which the men served should be stated before a fair comparison can be instituted. As the statement stands the total abstainers show the highest per-centage of daily sick, but reliable results can only be arrived at after years of observation.

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IV. Sickness and Mortality in Monthly Periods.

—	Average Strength.	Daily Sick.	Admissions.	Ratio per Mille.	Deaths.	Ratio per Mille.	Admissions. Cholera.	Admissions. Fever.	Admissions. Hepatitis and Bowel Disease.	Deaths. Cholera.	Deaths. Fever.	Deaths. Hepatitis and Bowel Disease.
5 Weeks in January -	10,423	489·9	1,138	109·2	14	1·3	1	228	120	1	1	5
4 Do. February -	10,003	517·9	842	84·2	7	0·7	—	168	97	—	3	1
4 Do. March -	9,621	483·3	784	81·5	9	0·9	—	149	75	—	—	2
4 Do. April -	9,147	458·2	746	81·6	9	1·0	1	101	67	—	1	3
5 Do. May -	9,952	499·5	1,138	114·4	9	0·9	—	346	109	—	1	3
4 Do. June -	9,614	500·4	1,022	106·3	19	2·0	—	303	83	—	2	3
5 Do. July -	9,906	562·4	1,297	130·9	13	1·3	1	448	134	—	1	5
4 Do. August -	9,912	556·4	983	99·2	8	0·8	5	325	123	3	—	3
4 Do. September -	9,702	509·2	871	89·8	10	1·0	1	255	96	—	2	4
5 Do. October -	9,801	485·8	979	99·9	16	1·6	1	323	91	1	3	5
4 Do. November -	9,606	369·5	639	66·5	11	1·1	3	188	58	3	—	4
4 Do. December -	8,607	351·6	686	79·7	10	1·2	—	163	54	—	1	[illegible]

V. Comparative Statement of Sickness and Mortality in the Artillery, Cavalry, and Infantry.

—	Average Strength.	Daily Sick.	Ratio of Admissions, all Causes, per Mille.	No. of Cases of Cholera.	Ratio, per Mille, of Admissions from Fever.	Ratio, per Mille, of Admissions from Bowel Affections.	Ratio of Deaths, all Causes, per Mille.	Deaths Cholera.	Deaths Fever.	Deaths Bowel Affections.
Artillery.										
Total of Artillery -	2,134	120·1	1,465	12	411	83·4	18	7	7	3
Cavalry.										
Total of Cavalry -	481	28·3	1,185	—	293	62·3	10	—	1	—
Infantry.										
Total of Infantry -	6,483	284·2	1,018	·1	272·7	70	11	1	7	9

VI. Sickness and Mortality from Classes of Diseases.

—	Zymotic.	Cachectic.	Local.	Developmental.	Violence.
Admissions - - - -	7,074	185	2,831	94	941
Deaths - - - - -	49	14	49	—	23
Per Mille to Strength.					
1868 Admissions - - -	729·9	19·1	292·1	9·7	97·1
1868 Deaths - - - -	5·1	1·4	5·1	—	2·4
1867 Admissions - - -	899·6	30·0	368·3	11·0	190·3
1867 Deaths - - - -	11·2	0·6	5·1	0·2	2·2

VIII.—Sickness and Mortality from various Diseases. BOMBAY.

—	Admissions.	Deaths.	Per Mille of Strength.		Ratio of each to all per cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Cholera	13	8	1·3	0·8	0·1	0·1
Smallpox	8	—	0·8	—	0·1	—
Measles	7	1	0·7	0·1	0·1	—
Dysentery	279	12	28·8	1·2	2·9	0·1
Diarrhœa	432	4	44·6	0·4	4·5	—
Fever, remittent and intermittent	2,618	11	270·1	1·1	27·0	0·1
,, other type	379	4	39·1	0·4	3·9	—
Scorbutus and purpura	12	—	1·2	—	0·1	—
Delirium tremens	26	2	2·7	0·2	0·3	—
Ebriositas	208	1	21·4	0·1	2·1	—
Phthisis pulmonalis	78	14	8·0	1·4	0·8	0·1
Hepatitis	396	24	40·9	2·5	4·1	0·2
Icterus	45	1	4·6	0·1	0·5	—
Spleen disease	40	—	4·1	—	0·4	—
All other causes	6,584	53	679·4	5·5	68·0	0·5

STATIONAL.—PRESIDENCY DIVISION.

Division.

Average Strength, 3,335. Daily Sick, 156.

—	All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
Admissions	3,413	1	823	125	139	1	28	142	15	720
Deaths	32	—	4	4	3	—	3	7	—	—
Ratio per Mille.										
Admissions	1,023·4	0·3	246·8	37·5	41·7	0·3	8·4	42·6	4·5	215·9
Deaths	9·6	—	1·2	1·2	0·9	—	0·9	2·1	—	—

Bombay.

Average Strength, 524. Daily Sick, 19.

Admissions	550	—	252	31	8	—	2	18	3	35
Deaths	1	—	—	—	—	—	—	—	—	—
Ratio per Mille.										
Admissions	1,049·6	—	480·9	59·2	15·3	—	3·8	34·3	5·7	66·8
Deaths	1·9	—	—	—	—	—	—	—	—	—

In the years 1866–67 the comparative immunity of troops from fever was marked; it was not so in 1868. The increased prevalence of fever among the men of the 23rd Regiment was attributed to a recurrence of the complaint the men had suffered from at Jubbulpore in 1866–67.

With the exception of the bread, the rations were good. No overcrowding of the barracks occurred, but the guard rooms were too small, and the family quarters too limited. MacDougall's powder had been used, and the sanitary condition of the cantonment well attended to, but the drainage was defective during the monsoon, and much water lodged near some of the barracks and the hospital.

BOMBAY.

Ahmedabad.

The works for providing a complete system of military buildings for the head quarters and a wing of a British regiment were commenced towards the close of the year.

Average strength 238
Daily sick - - 15
Deaths - - 4

The prevalence of fever, though above the average, was greatly less than the preceding year.

1868 - - 348·7
1867 - - 609·4
} per mille.

Liver affections caused considerable sickness, and venereal disease was very common, 306·7 per mille against 226·6 per mille in 1867.

The rations were complained of, and the hospital cooking considered to be very inferior. The drainage of the station continued in an imperfect state, but details for provision of new and complete accommodation had been nearly definitely settled at the close of the year.

Aden.

The health of the garrison during 1868 was in all respects comparatively good. Increased and improved accommodation would, it was expected, be shortly provided.

When the temperature was at 80° Fahrenheit, the artillery were wearing pilot cloth clothing, and on the 14th December "the sentry on guard fainted from the intense heat." A recommendation by the medical officer that more suitable clothing should be worn did not result in a change being made.

A small village in the rear of the town is "a horrid filthy place," and its proximity to the station is most objectionable.

POONA DIVISION.

Division.

Average Strength, 2,611. Daily Sick, 141.

—	All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
Admissions - -	3,715	11	1,229	64	141	6	19	136	10	562
Deaths - -	46	8	7	3	—	—	4	6	—	3
Ratio per Mille.										
Admissions - -	1,422·8	4·2	470·7	24·5	54·0	2·2	7·3	52·1	3·8	215·2
Deaths - -	17·6	3·1	2·7	1·1	—	—	1·5	2·2	—	1·1

Poona.

Average Strength, 1,590. Daily Sick, 83.

Admissions - -	2,068	1	641	45	80	4	17	79	8	344
Deaths - -	26	1	1	2	—	—	3	6	—	3
Ratio per Mille.										
Admissions - -	1,300·6	0·6	403·1	28·3	50·3	2·5	10·7	49·7	5·0	216·4
Deaths - -	16·4	0·6	0·6	1·3	—	—	1·9	3·8	—	1·9

The 46th Regiment in the Ghorpooree barracks seems to have suffered most from fever, said to be for the most part contracted in Bengal. The barracks are reported to have afforded only 67 superficial and 1,194 cubic feet space per man.

The prevalence of diarrhœa in September is attributed to the want of blankets.

Several men of the 96th Regiment suffered in June from "night blindness," and the affection was attributed to glare.

The lavatory accommodation of the barracks proper at Ghorpooree is reported as being insufficient, and the want of bath-rooms in connection therewith is felt. Cesspools are said to exist for reception of the discharge water, and to be emptied daily by hand; an objectionable system.

The hospital accommodation at Ghorpooree is said to be good and ample.

Owing to the late arrival from England of drafts, who had to be detained in Poona, the depôt barracks were overcrowded, affording in June, July, August, and September only 76 superficial feet per man; and there was considerable sickness. The quarter-guard is stated to have consisted of 15 men, and the guard-room to have afforded only 36 superficial and 432 cubic feet per man.

Ridge ventilation had been provided to the hospital with advantageous results. The hospital accommodation for women was most inadequate; it had to be supplemented by the use of tents in July and at other periods of the year.

Quarters for hospital establishments were much wanted, and owing to the want of latrines for hospital servants, the vicinity of the hospital was constantly in a filthy condition. Latrines were to be provided.

The removal of the General Depôt from Poona to Deolalee has, it is believed, been determined upon.

The alteration of latrines to adapt them to the use of dry-earth conservancy had been completed; sheds for the storage of earth had been constructed, and it is reported that "the dry-earth system appears to be in full employment everywhere, and has been a most decided success." There has been complaint, however, that the filth carts were "insufficient, and not well adapted for the purpose required."

An "increased number of Bheesties" had been allowed, and resulted in a better supply of water.

With rare exceptions the rations issued to the troops in Poona had been excellent.

No improvement had taken place in the mode of filtration of drinking water; "the system at present in use by chatties is a mockery and a delusion; half the water used both in barracks and hospital is not filtered at all, as the men help themselves out of that which contains most water, which is unavoidably the top chattie, where the water is unfiltered."

Kirkee.

Average strength	472	
Daily sick - -	24	
Admissions -	601, or 1,273·3 per mille.	
Deaths - -	4 „ 25·4 „	

Fever was much more prevalent than in 1867, principally among recent arrivals. Cholera attacked six men, four of whom died; it appeared during September and November. Three women were also seized with the disease. One death was from suicide.

The sanitary condition of the barracks was reported to be good and with no overcrowding. Several new barracks were occupied during the year, and construction of upper storied barracks and of a hospital for followers was in progress.

The water supply was, as usual, deficient in the hot weather; but a private well was rented, and supplied the deficiency.

Ahmednuggur.

Average strength	247	
Daily sick - -	19	
Admissions -	534, or 2,161·9 per 1,000.	
Deaths - -	5 „ 20·2 „	

Fever (388·7) and diarrhœa (145·7) had increased prevalence during 1868, and venereal disease (384·6 per mille), "always common at this station," was the cause of much increased sickness. The returns are less favourable than for the three preceding years. Four cholera cases occurred in August, three of which were fatal.

The water upon which the troops are chiefly dependent for their supply continued to be liable to pollution, as the conduit passes through the village of Bhingar, which is stated to contain about 5,000 inhabitants, and to be still in a dirty condition. The Executive Engineer thinks it probable that epidemics of cholera may be traced to the defective character of the water-supply, and writes on the 5th September, "I am "strengthened in this opinion by the offensive smell of the water used for drinking "purposes from one of the reservoirs at the Bhingar Gate I happened to inspect "only the other day."

It is in prospect to substitute metal piping for the imperfect masonry conduit in the parts of the watercourse most subject to injury, and works for improving the supply, &c. have been under consideration. The subject calls for continued

BOMBAY. attention until an ample supply of water of pure quality be secured to the troops quartered at Ahmednuggur.

The prevalence of venereal disease was very great. It is understood that some supervision of prostitutes, as authorised by the Cantonment Act, is exercised in Ahmednuggur, but the point has not been noticed in the Sanitary Reports from the station.

The two deaths not attributable to cholera were one from intemperance and one from pulmonary consumption.

Sholapoor.

Average strength	116
Daily sick - -	9
Admissions -	261, or 2,250·0 per mille.
Deaths - -	1 „ 8·6 „

1867, *60 cases, or 461·5 per mille.

1868, 163 cases, or 1405·2 per mille.

Great sickness from fever among the Artillery at this station was brought to notice in last year's report.*

In the year 1868 the prevalence of fever was still greater; the proportional number of cases was more than trebled, there having been no fewer than 163 cases during the year in an average strength of 116 men.

The severity of the fever appears not to have been great, as there was but one fatal case. It occurred in May.

The prevalence of fever had been attributed to the existence of an extent of marshy ground about one-third of a mile distant from the barracks.

The great immunity from venereal disease is noteworthy, 5 cases, or 43·1 per mille. In 1867 there were 26 cases or 200·0 per mille.

Belgaum.

Average strength	925
Daily sick - -	70
Admissions -	1,028, or 1,111·3 per mille.
Deaths - -	11 „ 11·9 „

This station preserved its unenviable notoriety as a hot-bed for the generation of venereal disease (393 cases or 424·8 per mille. Uncleanly habits of Madrassee [illegible] said to be the cause. A place had been fitted as a Lock Hospital, but was not [illegible] during 1868.

As usual at Belgaum there was comparative immunity from fever [illegible] 114·6, death 1·1 per mille).

A detailed report of this station by the Sanitary Commissioner is appended to the Sanitary Report. The water supply is said to be plentiful, and the result of [illegible] analysis satisfactory. The subjoined table shows that Belgaum has long possessed a reputation for salubrity.

Year.	Mean Strength.	Sickness.			Mortality.						Corps.
					Number of Deaths.			Ratio per mille, Deaths to Strength.			
		Mean daily Sick.	Ratio per mille, daily Sick to Strength.	Admissions from Venereal Disease during the Year.	Cholera.	Other Causes.	All Causes.	Cholera.	Other Causes.	All Causes.	
1862	1,151	92	79·93	619	–	15	15	—	13·03	13·03	83d Foot (four weeks in 1st Quarter) 2/8 and 2/21 R. A., 44th Foot and Garrison Details.
1863	1,150	65	56·52	434	–	14	14	—	12·17	12·17	E/18 and 3/21 R. A., 44th Foot and Garrison Details.
1864	1,064	70	65·79	485	1	15	16	0·94	14·10	15·10	E/18 and 3/21 R. A., 44th Foot and Garrison Details.
1865	932	56	60·09	271	–	12	12	—	12·86	12·86	E/18 and 5/21 R. A., 44th Foot and Garrison Details.
1866	1,024	71	69·34	461	–	10	10	—	9·77	9·77	E/18 and 5/21 R. A., 26th Foot and Garrison Details.
1867	1,015	82	80·79	680	–	8	8	—	7·88	7·88	E/18 and 5/21 R. A. and 26th Foot.
1868	529	70	75·68	396	–	11	11	—	11·89	11·89	E/18 and 6/5 R. A. and 108th Foot (26th Foot to 18th March 1868).

Venereal disease, it is stated, prevails to a greater extent among the military at Belgaum than at any other station in the Bombay Presidency.

The ratio of admissions to hospital from venereal disease among the British troops at Belgaum was—

In 1864	455·8	per mille.
1865	290·8	„
1866	450·2	„
1867	669·9	„
1868	428·1	„

The cantonment is on the whole favourably reported on. Certain recommendations were made, especially for increased public latrine accommodation, and the speedy completion of arrangements for opening the Lock Hospital, an old building recently adapted, was strongly urged.

In the Fort recommendations are made regarding the surface drainage, and the state of the fort ditch. Fault was also found with the hospital accommodation, but a new hospital was to be built on an improved plan.

In the Lines generally attention was called to the necessity of thinning tree growth and exuberant vegetation, and in the artillery barracks many improvements were suggested in the buildings, and the construction of a new block of family quarters according to the approved plan was considered most desirable. A complete system of new barracks for the separate accommodation of the artillery (one light field battery) was to be laid out on an eligible site.

The family quarters are also much crowded in the barracks for European troops. There were in all 12 old permanent barracks constructed, 1837–1842, and three new barracks were in course of completion, to be built in accordance with the Bombay standard plan of barrack, circulated by Government in 1867. Each barrack was to contain 44 men, and sites had also been selected for five half company barracks for 36 men each.

The town of Belgaum itself is situated in lat. 15° 52′ N., and long. 74° 42′ E., 50 miles in a direct line from the sea, and at an elevation of 2,100 feet above it. The mean temperature is 74° 42′, the highest (97°) being attained in April, and the lowest (57°) in January. The town is laid out with some regularity, and the principal streets are kept in good order. It has an area of about 375 acres, and is reported to contain 3,992 houses, with 19,371 inhahitants. The interior of the native dwellings are said to be clean, but the exteriors and surroundings very foul, especially among the agricultural class where verandas and entrance passage are appropriated to cattle, with little or no provision for drainage. There are no public latrines, but a curious system of latrine caverns or pits in the court yard of every family excavated to a considerable depth, platformed over, the whole generally covered with a tiled hut. These latrine caverns have existed from time immemorial and are said to number 2,240. The arrangements for removing the evil, if any, seem very defective. Though the water supply is abundant, the wells are often situated in close proximity to these latrine pits. It was recommended that these caverns should be suppressed, and public and private latrines built on an approved plan.

The conservancy of the jail was said to be satisfactory, but the police were located in wretched dilapidated huts, surrounded by open cesspits, with no provision for drainage. The whole ground in and about the lines pregnant with abomination. Government ordered (6th February 1869, No. 298) that arrangements should be made in the Public Works Department for the provision of new police lines without delay.

BOMBAY.

MHOW DIVISION.

Division.

Average Strength, 2,160. Daily Sick, 102.

	All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
Admissions	2,474	—	616	40	92	4	10	96	8	460
Deaths	19	—	3	2	—	—	1	4	—	—
Ratio per Mille.										
Admissions	1,145·4	—	285·2	18·5	42·6	1·8	4·6	44·4	3·7	212·9
Deaths	8·8	—	1·4	0·9	—	—	0·4	1·8	—	—

Mhow.

Average Strength, 1,134. Daily Sick, 55.

Admissions	1,187	—	303	23	25	3	5	25	3	227
Deaths	10	—	2	—	—	—	1	—	—	—
Ratio per Mille.										
Admissions	1,046·7	—	267·2	20·3	22·0	2·6	4·4	22·0	2·6	200·2
Deaths	8·8	—	1·8	—	—	—	0·9	—	—	—

The health of the troops at Mhow was very satisfactory during the year under notice. The great diminution in the number of cases of fever is remarkable. The ratio of admissions to hospital from fever has fallen from 940 per mille in 1867 to 267 per mille in 1868. During the period specified, considerable drainage works have been effected; great improvement has been made in the ventilation of the barrack rooms and subsidiary buildings; the removal of stables and litter depots from the windward side of the barracks has been accomplished. To these and similar measures, calculated to better the condition of the troops at Mhow, may reasonably be attributed the marked improvement in health.

The building of new barracks and of a hospital, on the standard plans, was in progress; and the work of providing satisfactory accommodation for the troops was being steadily prosecuted.

Measles prevailed to a considerable extent in March and April. Six men and 82 children were affected, and 15 of the latter died.

Latrines on the dry-earth principle had been built for native servants in each officers compound.

A lock hospital was opened on 1st January 1868, but a diminution in the prevalence of venereal disease had not resulted therefrom.

The artillery were far more unhealthy than the cavalry or infantry, this last being the arm of the service which enjoyed the best health during the year.

The cavalry and infantry have upper-storied barracks, whereas it is understood that the artillery occupy ground-floor barracks, which it has been stated do not admit of thorough perflation. The comparatively greater sickness among the artillery has been attributed to the bad site of the barracks occupied by them, and to the juxta-position of the stables to windward in the cold weather. The duties of the artillery were heavy, the non-commissioned officers having frequently only "four nights in bed."

The cloth clothing worn both by the cavalry and the artillery has been noticed, as it also was last year, to have been at times oppressively warm, and not conducive to the health of those required to wear it.

Indore.

Average strength 78
Daily sick - 2

There was considerable sickness from fever, 35 cases or 461·5 per 1,000, but this was considerably less than the previous year (822·8 per mille).

The barrack accommodation was good and well ventilated. Officers' quarters had been built and were found comfortable.

The facility of obtaining liquor from Holkar's territory, and the consequent intemperance of the soldiers, was again brought to notice. One man was found dead from the effects of excessive indulgence in liquor. BOMBAY.

Average strength 263
Daily sick - - 16

There was much improvement in the health of troops as compared with previous years, but fever still prevailed in a high ratio (150 cases, 570·3 per mille, and 1 death). The condition of the cantonment as regards cleanliness was said to be excellent. Neemuch.

The dry-earth system of conservancy had been generally and successfully followed, except in the Suddur Bazar latrines. Latrines on a new plan for natives were being erected in various localities.

A Lock Hospital was established in May, and afterwards venereal disease diminished perceptibly.

There was great improvement in health and remarkable immunity from fever. Venereal disease was said to have been propagated by female coolies employed on works in the cantonments. Nusseerabad.

At Ajmere the hospital would admit of considerable improvement. At Asseerghur the prevalence of fever (180·0 per mille) was attributed to malaria imbibed at Jubbulpore. The objectionable practice was continued of disposing of the latrine and other filth by throwing it over the scarp at the south rampart.

SIND DIVISION.

Division.

Average Strength, 1,088. Daily Sick, 36.

—	All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis. and Icterus.	Spleen Disease.	Enthetic Disease.
Admissions - -	956	1	218	24	49	1	10	30	4	141
Deaths - - -	20	—	1	—	1	—	1	3	—	—
Ratio per Mille.										
Admissions - -	878·7	0·9	200·4	22·0	45·0	0·9	9·2	27·6	3·7	129·6
Deaths - - -	18·4	—	0·9	—	0·9	—	0·9	2·8	—	—

The general health of the troops was good, and the ratio of fever much reduced. Kurrachee.

1867 (fever) 453 cases
1 death
1868 „ 185 cases
no death

The large mortality (16 or 21·3 per mille) is accounted for by seven deaths from sunstroke, and six deaths among the men in the depôt from the same cause in June when the heat was excessive.

Church parades being held so late as 6.30 in the morning was at that time brought to notice as being fraught with danger.

The dry-earth latrines in the Napier lines were ineffective from position and insufficient accommodation.

The work of adding an upper story to the Napier Barracks had commenced, and the provision of better accommodation for the quarter guard and prisoners of the Artillery was about to be effected.

The occupants of the depôt barracks were far from healthy. The Senior Medical Officer of British Troops in Sind considers these barracks unhealthy, and is "strongly "of opinion that the floors and walls are impregnated with decayed organic matter, "exercising a morbific influence, resulting in the recurrence of typhus and typhoid "fever" among the occupants.

"Fever of a dangerous type prevailed to a considerable extent;" "there were "between the 5th June and the 21st August no less than 310 cases of fever admitted "from the Depôt Barracks."

"On the 14th August . . . one hundred men were ordered out to Ghizree under "canvas;" there was not "a single admission for fever among them from the day "they left the depôt." All the troops occupying the Depôt Barracks were sent

BOMBAY.

out and remained under canvas at Ghizree until they left for up-country, the 19th November 1868, during which time there were not more than a dozen admissions from fever, and in its mildest form.

"The barracks were again occupied for the second time during the year on the 28th of November (being previously well cleaned and thoroughly lime washed) by troops arriving from England . . . and from the above date to the end of the year ten men were admitted to hospital for fever, from which number one died of typhoid symptoms, leaving two others in a hopeless state from the same disease." "The "Sanitary Commissioner is of opinion that the result would not only be equally as "prejudicial to those occupying these barracks, but that the evil would increase "year after year."

The out-houses of the depôt family quarters are reported to have been in dirty condition, and the conservancy of the vicinity of the barrack premises to have been not satisfactory.

Hydrabad.

The proportions of admissions to hospital (704·5 per mille) was less than at any other of the ordinary stations at the Presidency. The accommodation was in every respect good, and the conservancy of the whole camp rigorously attended to. Sunstroke proved fatal in several cases during the month of June. The Female Hospital is stated to be small and useless, and the drainage of the barrack premises not sufficiently provided for.

SANITARIA.

Total Invalids and Convalescents.

Average Strength, 148. Daily Sick, 36.

—	All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
Admissions - -	316	—	47	13	3	—	10	31	3	36
Deaths - - -	16	—	—	3	—	—	5	4	—	—
Ratio per Mille.										
Admissions - -	2,135·1	—	317·6	87·8	20·3	—	67·6	209·5	20·3	243·2
Deaths - - -	108·1	—	—	20·3	—	—	33·8	27·0	—	—

Aboo.

The sanitary condition of the station is at certain seasons very indifferent.

The Bazar is described as small, irregular, built in a marshy hollow, unpaved, without gutters, and so narrow as to impede air and ventilation. The Bazar latrines are stated to have been dirty.

A Sanitary Committee had been formed in the rainy season, and subscriptions for effecting the conservancy of the station were paid monthly by the European residents.

There is, however, no properly constituted Cantonment authority; it is said that political considerations stand in the way.

The rank vegetation had been cut down and removed, and the drains had been cleaned out and repaired after the rains.

The surface drainage is excellent, but it is again urged that subsoil drainage is greatly to be desired.

A systematic inspection of prostitutes had been made with good results.

Notice of want of quarters for sick officers was repeated.

A new hospital had been partly constructed, but its completion was arrested by the work proving not substantial.

Porundhur.

Drainage works had been in progress throughout the year. The ventilation of the barrack rooms and of the hospital has been stated to be perfect.

The tank "at the eastern end (of the station) . . . is badly situated, as it is in "the lowest part of the cantonment." "Last year there was often a very offensive "smell from it . . . this year there is none. I can easily account for this as a large "number of water fowl have been constantly kept on it up to a very short time ago, "and as they have been removed the scum has again returned." The "scum" is probably water plants of the sub-order *Characeæ*, which occasionally communicate their fetid odour to the water of the reservoirs, and render it unpleasant.

The water fowl (ducks and geese), it is reported, eat the vegetation and agitate the water of the tank, and thereby exercise a conservative influence upon it.

Annual Returns of Sickness and Mortality amongst Officers, Women, and Children during 1868.

No. 1.—Annual Return of Officers from 1st January to 31st December 1868.

(Strength, 466.) { Ratio of Sickness, 929·2 per mille.
„ Mortality, 12·9 „

Diseases.	Variola.	Tonsillitis.	Ophthalmia.	Furunculus.	Dysenteria.	Diarrhœa.	Erythema.	Febris Intermittens.	„ Remittens.	„ Continua.	Rheumatismus.	Syphilis Primaria.	„ Secundaria.	Gonorrhœa.	Bubo.	Phymosis.	Necusia.	Orchitis Goni.	Stricture Ureth.	Vermes.	Tœnia Solium.	Porrigo.	Podagra.	Anœmia.	Anasarca.	Lumbago.	Phthisis Pul.	Paralysis.	Cephalæa.	Neuralgia.	Odontalgia.	Encephalitis.	Otitis.	Cœcitas.
Remained last Return	–	–	–	–	1	–	–	2	–	–	2	2	1	1	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Admitted	1	4	7	7	10	24	1	90	8	21	19	7	4	8	5	1	1	3	1	1	2	1	6	5	1	1	1	5	3	1	1	3	1
Total treated	1	4	–	7	11	24	1	92	8	21	21	9	5	9	6	1	1	3	1	1	2	1	6	5	1	1	2	1	5	3	1	1	3	1
Discharged	1	4	6	7	11	23	1	92	8	20	21	9	5	9	6	1	1	3	1	1	2	1	6	5	1	1	1	1	5	3	1	–	3	1
Died { With the Corps	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–
Died { Absent from Corps	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Remaining	–	–	1	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

continued.

Diseases.	Delirium Tremens.	Carditis.	Bronchitis.	Pleuritis.	Asthma.	Dyspepsia.	Colica.	Hœmorrhoids.	Splenitis.	Hepatitis.	Icterus.	Cystitis.	Orchitis not Goni.	Prurigo.	Eczema.	Phlegmon.	Ecthyma.	Abscessus.	Ulcus.	Paronychia.	Bubo Simplex.	Asthenia.	Ambustio.	Insolatio.	Fractura.	Contusio.	Vul. Scloper.	„ Incisum.	Subluxatio.	Vesiculæ Pedis.	Amputatio.	Morsus Serpentis.	Total.
Remained last Return	–	–	–	–	1	–	1	–	–	1	–	3	–	–	–	2	–	2	–	–	7	–	–	–	–	–	–	1	–	–	–	–	19
Admitted	2	1	8	1	–	25	5	5	3	20	1	–	2	1	2	18	1	4	8	2	–	3	2	2	3	17	1	4	5	1	1	–	414
Total treated	2	1	8	1	1	25	6	5	3	21	1	3	2	1	2	20	1	6	8	2	7	3	2	2	3	17		4	6	1	1	1	433
Discharged	2	1	8	1	1	25	6	5	3	20	1	3	2	1	2	20	1	6	8	2	7	3	2	2	3	16	1	4	6	1	–	1	425
Died { With the Corps	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	4
Died { Absent from Corps	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	2
Remaining	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4

No. 2.—Annual Return of Women from 1st January to 31st December 1868.

(Strength, 1,085.) { Ratio of Sickness, 1,082 per mille.
„ Mortality 20·2 „

Diseases.	Variola.	Varicella.	Morbilli.	Tonsillitis.	Ophthalmia.	Furunculus.	Erythema.	Dysenteria.	Diarrhœa.	Metria.	Cholera Spas.	Febris Intermittens.	„ Remittens.	„ Continua.	Rheumatismus.	Syphilis, secondary.	Scorbutus.	Ebriositas.	Tœnia Solium.	Vermes.	Podagra.	Anœmia.	Anasarca.	Phthisis Pulmonalis.	Cephalea.	Neuralgia.	Tetanus.	Mania.	Odontalgia.	Paralysis.	Epilepsia.	Apoplexia.	Otitis.	Chorea.	Conjunctivitis.	Syncope.	Bronchitis.	Pneumonia.	Gastritis.
Remained last Return.	–	–	1	1	1	–	–	–	1	–	1	6	–	–	2	1	–	–	–	–	–	2	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
Admitted	3	1	2	10	51	3	1	36	73	1	3	249	25	34	14	–	1	2	3	2	1	32	1	2	4	6	1	1	1	1	3	2	3	1	1	1	30	1	1
Total treated	3	1	3	11	52	3	1	36	74	1	4	255	25	34	16	1	1	2	3	2	1	34	1	2	4	6	1	2	1	1	3	2	3	1	1	1	30	1	1
Discharged	3	1	3	11	52	3	–	33	70	1	2	249	25	33	15	1	1	2	3	2	1	33	1	1	4	6	–	2	1	1	3	–	3	1	1	1	30	1	1
Died in hospital	–	–	–	–	–	–	–	2	1	1	2	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–
Remaining	–	–	–	–	–	–	1	1	4	–	–	5	–	–	1	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–

continued.

Diseases.	Peritonitis.	Hœmorrhoids.	Obstipatio.	Enteritis.	Dyspepsia.	Colica.	Ascites.	Splenitis.	Hepatitis.	Icterus.	Hœmatemesis.	Nephritis.	Enuresis.	Hysteritis.	Prolapsus Uteri.	Psoriasis.	Herpes.	Urticaria.	Phlegmon.	Abscessus.	Ulcus.	Chlorosis.	Partus.	Abortus.	Leucorrhœa.	Dysmenorrhœa.	Amenorrhœa.	Climacteria.	Paramenia.	Asthenia.	Insolatio.	Fractura.	Contusio.	Subluxatio.	Vesiculæ Pedis.	Vulnus Incisum.	Total.
Remained last Return.	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	1	–	–	1	1	–	10	1	1	–	–	–	–	–	–	1	–	–	1	–	36
Admitted	1	1	2	1	46	13	1	2	22	4	1	1	1	3	1	1	–	1	3	5	15	2	310	19	–	1	1	1	19	32	6	3	7	3	–	2	1,138
Total treated	1	1	2	1	46	13	1	2	23	5	1	1	1	3	1	1	1	1	3	6	16	2	320	20	1	1	1	1	19	32	6	4	7	3	1	2	1,174
Discharged	–	1	2	–	45	13	–	2	20	4	1	1	1	3	1	1	1	1	3	5	14	1	315	20	1	1	1	1	19	32	3	4	7	3	1	2	1,130
Died in hospital	1	–	–	1	–	–	1	–	3	1	–	–	–	–	–	–	–	–	–	1	1	–	1	–	–	–	–	–	–	–	3	–	–	–	–	–	22
Remaining	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	22

No. 3.—ANNUAL RETURN of CHILDREN from 1st January to 31st December 1868.

(Strength, 1779.) { Ratio of Sickness, 712·8 per mille.
„ Mortality, 83·2 „

DISEASES.	Variola.	Varioloides.	Morbilli.	Varicella.	Cynanche Trachealis.	Tonsillitis.	Influenza.	Parotitis.	Ophthalmia.	Erysipelas.	Pertusis.	Furunculus.	Dysenteria.	Diarrhœa.	Febris Intermittens.	„ Remittens.	„ Typhoides.	„ Continua.	Rheumatism.	Syphilis, secondary.	Cachexia Syph.	Rabies.	Rachitis.	Porrigo.	Aphtha.	Tœnia Sol.	Ascaris Lumbra.	Scabies.	Anæmia.	Anasarca.	Scrofula.	Tuber Mesent.	Morbus Cox.	Cephalœa.	Otitis.	Meningites.	Hysteria.	Hydrocephalus.
Remained last Return.	–	–	8	–	–	–	–	–	2	–	–	–	1	4	13	2	–	–	–	1	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–
Admitted - -	1	6	129	1	8	9	1	5	143	2	7	5	34	182	214	19	2	47	3	1	1	1	3	1	4	1	3	1	52	1	9	10	2	2	4	1	3	9
Total treated -	1	6	137	1	8	9	1	5	145	2	7	5	35	186	227	21	2	47	3	2	1	1	4	1	4	1	3	1	53	1	9	10	2	2	4	1	3	9
Discharged - -	1	6	116	1	5	9	1	4	142	2	6	5	22	164	219	16	2	46	3	1	–	–	4	1	4	1	3	1	49	–	9	5	1	1	4	–	3	8
Died in hospital -	–	–	21	–	3	–	–	–	–	–	–	–	11	20	4	5	–	1	1	1	1	1	–	–	–	–	–	–	4	1	–	5	–	1	–	–	–	1
Do., out of hospital	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Remaining - -	–	–	–	–	–	–	–	1	3	–	1	–	2	2	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–

continued.

DISEASES.	Epilepsia.	Convulsio.	Conjunctivitis.	Morbus Cordis.	Bronchitis.	Pneumonia.	Dyspepsia.	Colica.	Hernia.	Splenitis.	Hepatitis.	Icterus.	Prolapsus ani.	Ischuria.	Hydrocele.	Urticaria.	Psoriasis.	Eczema.	Impetigo.	Pemphigus.	Phlegmon.	Abscessus.	Ulcus.	Prematura Natus.	Dentitio.	Leucorrhœa.	Atrophia.	Asthenia.	Explosio.	Ambustio.	Fractura.	Insolatio.	Contusio.	Vulnus Incisum.	Luxatura.	Subluxatio.	Venenatio.	Morsus Canis.	Total.
Remained last Return.	–	1	–	–	1	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	2	–	–	–	–	–	1	–	–	–	–	–	–	40
Admitted - -	2	32	1	1	42	6	8	3	1	4	2	6	1	1	1	1	–	3	3	4	5	4	6	2	66	1	5	64	2	3	5	1	5	4	1	2	1	2	1,228
Total treated -	2	33	1	1	43	6	8	3	1	4	3	6	1	1	1	1	1	3	3	4	5	4	6	2	68	1	5	64	2	3	6	1	5	4	1	2	1	2	1,268
Discharged - -	2	3	1	1	35	4	8	3	1	4	3	6	1	1	1	1	1	3	3	4	4	4	5	–	56	1	1	54	2	3	6	–	5	4	1	2	–	2	1,101
Died in hospital -	–	30	–	–	7	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	12	–	4	6	–	–	–	1	–	–	–	–	–	–	146
Do. out of hospital	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Remaining - -	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	4	–	–	–	–	–	–	–	–	1	–	21

SECTION II.

NATIVE TROOPS.

Accommodation.

As it was contemplated locating the native troops in Bombay in barracks of two or more stories, requisition was made for a suitable design. The Government of India took objection to portions of the plan submitted, and detailed plans of the buildings were asked for, reference being previously made to the Government of India with reference to the space to be allowed.

Instructions were circulated for the purification of barracks when cholera had occurred amongst the occupants.

A modification of the standard plan of latrines for natives was devised with the object of separating the water used for ablution from the *dejecta*, and thus admitting of the application of the dry-earth system of conservancy to these latrines. A latrine approximately on the modified plan had been built at Poona, and the system was undergoing trial; the results were awaited with interest.

STATISTICAL.

Twice as many recruits were received into the Native Army during 1868 as in the previous year, and this resulted in a greater strength by 1,498 men at the end than at the beginning of the year.

Strength, 1st June 1868, 25,298.
*Strength, 1st June 1869, 26,796.

* Artillery	274
Artillery Store Lascars	278
Sappers and Miners	561
Staff and Guides attached to Sind Horse	315
Cavalry	3,584
Infantry	21,784
Total	26,796

Invaliding 33·8
Mortality 11·6
} on a strength of 28,074 men.

The loss by invaliding (33·8 per mille) has scarcely varied during three years. Invaliding.

The total mortality in 1868 (11·6 per mille) as exhibited in the Adjutant General's Return somewhat exceeded that of each of the preceding two years, and may be attributed to more numerous deaths from cholera. There appear to have died 87 men when absent from their corps. Mortality.

Of the men actually present with their corps there were about 40 constantly sick out of every 1,000 men. This is a higher rate than is presented by either of the two previous years, and may be ascribed to a number having been engaged in foreign service in Abyssinia. The greatest proportional number of admissions occurred in October, the fewest in June. Amount of sickness.

Fever was the cause of upwards of 45 per cent. of the total sickness. Bowel affections and scurvy prevailed in a greater degree than in the two preceding years, the increase being attributable to exposure and imperfect nourishment in Abyssinia. Causes of sickness.

Twenty-nine men were attacked with cholera, and of these 17 died. The cases occurred at nine several stations and between August and December. Cholera.

As in 1867, so in 1868, the cases of smallpox were more numerous than in the two preceding years. Smallpox.

Sickness and Mortality among Native Troops.

Year.	Mean Strength from Monthly Returns.	Admissions into Hospital.	Daily Sick.	Deaths in Hospital.	Invalided to be discharged.	Ratio to Strength, per mille.			
						Admissions.	Daily Sick.	Deaths in Hospital.	Invalided.
1865	24,737	26,443	1,001·0	365	1,015	1,068·7	40·5	14·8	41·0
1866	24,451	28,769	902·6	162	920	1,176·6	36·9	6·6	34·4
1867	24,835	27,417	873·0	194	896	1,104·0	35·1	7·8	33·8
1868	26,533	35,161	1,054·0	240	951	1,325·1	39·7	9·1	33·8

Sickness and Mortality from Various Diseases.

—	Admissions.	Deaths.	Ratio per mille of Strength.		Ratio of each to all per cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Cholera	29	17	1·1	0·6	0·1	0·1
Small-pox	41	1	1·5	—	0·2	—
Measles	7	—	0·3	—	—	—
Dysentery	911	26	34·3	1·0	3·5	0·1
Diarrhœa	1,400	12	52·8	0·5	5·3	—
Fever, remittent and intermittent	15,263	57	575·2	2·1	57·5	0·2
„ of other type	634	1	23·9	—	2·4	—
Scorbutus and Purpura	615	12	23·2	0·5	2·3	0·8
Delirium tremens	2	—	0·1	—	—	—
Ebriositas	8	—	0·3	—	—	—
Hydatid	—	—	—	—	—	—
Vermes	—	—	—	—	—	—
Phthisis pulmonalis	43	12	1·6	0·5	0·2	—
Hepatitis	82	8	3·1	0·3	0·3	—
Icterus	46	4	1·7	0·2	0·2	—
Spleen	76	—	2·9	—	0·3	—
All other causes	29,704	90	1,119·5	3·4	112·0	0·3

BOMBAY.

1868.	Average Strength.	Daily Sick.	Admissions.	Ratio per Mille.	Deaths.	Ratio per Mille.	Admissions. Cholera.	Admissions. Fever.	Admissions. Hepatitis and Bowel Disease.	Deaths. Cholera.	Deaths. Fever.	Deaths. Hepatitis and Bowel Disease.
January - -	25,444	760·2	2,471	97·1	19	0·7	—	915	202	—	3	6
February - -	25,402	878·1	2,582	101·6	18	0·7	—	1,048	201	—	3	4
March - - -	23,668	814·2	2,623	110·8	19	0·8	—	855	254	—	9	4
April - -	25,423	964·1	2,814	110·7	20	0·8	—	1,132	336	—	6	3
May - - -	28,072	1,056·0	2,852	101·6	25	0·9	—	1,086	260	—	7	6
June - - -	28,337	1,030·0	2,648	93·4	24	0·8	—	1,138	187	—	8	7
July - - -	27,687	1,069·6	2,782	100·5	17	0·6	—	1,144	221	—	3	3
August - -	27,323	1,079·9	2,897	106·0	9	0·3	6	1,239	181	1	2	1
September - -	27,431	1,222·0	3,274	119·4	18	0·7	2	1,612	147	2	3	4
October - -	26,938	1,445·3	3,927	145·8	16	0·6	4	2,326	137	1	2	2
November - -	27,055	1,272·9	3,522	130·2	27	1·0	12	2,046	155	8	5	4
December - -	25,653	1,055·9	2,769	107·9	28	1·1	5	1,356	112	5	7	2

STATIONAL.

Poonah Division.

Average strength - -	8,113	
Daily sick - -	306·3	
Admissions - -	1,155·4	per mille.
Deaths - - -	8·0	

Poonah.

Average strength	2,358	
Daily sick - -	78·9	
Admissions -	1,039·9	per mille.
Deaths - -	6·8	

The 3rd Regiment of Cavalry lost 15 men from the effects of scurvy contracted in Abyssinia.

The hospital for cavalry at Ghorpooree had been finished, and was described as being "very fine."

The drainage of the hospital latrines was not sufficiently provided for, and the receptacles were unmanageable from their large size.

The lines not being visited by a conservancy cart led to accumulation of filth to leeward, where it remained to be sold with the horse litter as opportunity offered.

The 24th Regiment located at Poona throughout the year enjoyed excellent health.

Two deaths were occasioned by accident during demolition of a hut.

Kirkee.

Average strength	288	
Daily sick - -	20·6	
Admissions -	1,913·2	per mille.
Deaths - -	13·9	

There was much sickness from fever (1,194·4 per mille) and bowel affections (dysentery 55·9, diarrhœa 86·8 per mille), and the sanitary condition of the native troops at this station is described as having been very bad.

The lines were of temporary construction, and there was much overcrowding till November when some new blocks of huts were completed.

The latrine accommodation was very limited, and the arrangement of the seats "of the very worst description," "the filth being collected by means of water into "holes in the rear of each latrine and thence carried (away) by hand."

In the neighbourhood of the lines are "various small pools of water," "a patch of "swampy ground," and in close proximity the bazar.

The bed of the river in the neighbourhood was allowed to run dry in October and November during the execution of some work at the Poona Bund, and much of the sickness that prevailed in these months is believed to be "attributable to this cause."

The circumstances of the sappers and miners at Kirkee call for attention. It is reported that there is no room for their location in satisfactory condition "within "limits of Kirkee proper."

Sattara.

Average strength	181	
Daily sick - -	12·0	
Admissions -	1,977·6	
Deaths - -	11·0	

The increased sickness was attributed to fever engendered at Surat, and to impairment of health in Abyssinia.

The lines were rapidly constructed in a good situation in June; but the "thin *chupper* roofs" "hardly afforded sufficient protection during the heavy rains of August."

There having been no European troops at Sattara during the monsoon, the European Hospital was made available for the sick of the Native Regiment, but subsequently a portion of the unoccupied lines was adapted to the purpose. South-east of the lines is "a large *nulla*, where the inhabitants of a few huts resort for the "purposes of nature," and in the same direction lies the cantonment manure yard. It is recommended as "advisable that the manure yard should be covered over with "three or four feet of dry earth and that locality abandoned for such a purpose."

Ahmed-nuggur.

Average strength	715
Daily sick - -	33·4
Admissions -	1,925·9
Deaths - -	7·6

The rates of admissions from fevers was nearly treble what it had been for the preceding three years :—

	Per mille.
1865 - - -	359·5
1866 - - -	393·1
1867 - - -	366·7
1868 - - -	1,135·7

There were also 11 cases of scurvy.

Kulladghee.

No special sanitary report for 1868 had been received from this station (Ahmed-nuggur) or from that of Kulladghee, where the increasing prevalence of fever is also noticeable.

Malligaum.

At Malligaum increased sickness was in consequence of service in Abyssinia. The lines occupied by the artillery had fallen into a ruinous and dangerous state.

Dhoolia.

The general health of the troops at Dhoolia had been very good for three years, a period coincident with their occupation of new well-constructed lines. The troops did not altogether escape cholera, which prevailed extensively in the surrounding districts. Seven cases and four deaths occurred among them.

Asseerghur.

Average strength	44·
Daily sick - -	0·3
Admissions -	659·1 per mille.

The lines had undergone repair, but are reported as "unsuitable," "badly aired and ventilated," "no verandas," and these cannot be added "for want of space."

The hospital is described as "utterly insufficient," "most uncomfortable, over-"draughty, and almost at times uninhabitable."

"There are moreover no bath, or wash, or cook houses, and the sick in severe wet or cold or trying weather, lasting for about six months in the year, have not unfrequently to do without their meals; there being no places set apart for cooking them except an open shed, which, when it can be spared, they are allowed to make use of."

The quarters for hospital establishment are "totally unsuitable;" and the death of one woman during the monsoon is attributed to discomfort and over exposure in these dwellings.

The latrines for the natives are stated to have been a great nuisance.

Belgaum.

Average strength	1,436
Daily sick - -	51·6
Admissions -	904·6 per mille.
Deaths - -	9·7 per mille.

The general health of the troops was very good in 1868, but the mortality from fever, 6·3 per mille, unusually high.

In the special Sanitary Report from this station, the only point urged is the necessity for provision of isolated hospital accommodation for cases of contagious disease. It was also recommended that the open drains should be paved, the latrines reconstructed, and the hospital accommodation increased.

Dharwar.

Average streugth	604
Daily sick - -	29·9
Admissions -	1,400·7 per mille.
Death - -	1·7 per mille.

The health of the native regiment at Dharwar in 1868 was not satisfactory.

There was much prevalence of fever.

The necessity for the construction of new lines had been admitted.

The question "of site had been under consideration."

The position considered best by the medical officers of the 12th Regiment is "on the south of the Keilgerry Tank, on fine healthy table-land 40 or 50 feet above "the tank."

The quality of the water supply has been reported as defective, and guinea-worm is stated to be very prevalent, "the average number of sick from that cause alone "being 10 per cent. of the total monthly sick, making 120 cases in the year out "of a regimental strength of 600."

BOMBAY.

NORTHERN DIVISION.

Average strength -	8,100
Daily sick - -	281·5
Admissions - -	1,114·7
Deaths - -	5·7

At Ahmedabad, Deesa, Baroda, Dwarka, Burda Chowkey, Mhow, Neemuch, Nusseerabad, and Indore, fever had been very prevalent during 1868. At Indore more than half the sickness was caused by fever, and it is stated that "vegetation is "luxuriant, after the rains, close to the station." The lines were well drained, but the hospital accommodation very bad.

At Burda Chowkey the causes of fever is attributed to dampness and the bad site of the lines, "the ground being so low that deep channels are required on either side "of them to carry off the water during the rains, otherwise it would enter the "houses." "A river which passes a few hundred yards from camp, is merely a "string of stagnant pools covered over with weeds," except during the rains.

"The site of the camp is altogether the most unhealthy that could be chosen for miles around."

"The hospital is not fit by any means for the purpose for which it is employed, and is totally devoid of cots."

Mehidpore. At Mehidpore the sickness in 1868 was large.

Admissions -	1,661·0	per mille.
Deaths -	135·6	

Seven deaths were from cholera. No special report had been received.

SIND DIVISION.

Average strength	3,870	
Daily sick -	103·7	
Admissions -	1,557·4	per mille.
Deaths -	10·1	

Kurrachee. The general health of the troops had been good, though there was increased prevalence of fever (423·5 per mille).

The lines "are old, badly built, and without any system of thorough drainage."

Hydrabad. The returns show much increased sickness from fever—

1867 - - -	172·0	per mille.
1868 - - -	243·9	

and venereal disease :—

1867 - - -	74·0	per mille.
1868 - - -	112·6	

Miasmatic diseases were also prevalent during July, August, and September.

There had been a scanty rainfall, and an extraordinary high range of temperature from May to September.

Jacobabad.

Average strength	2,169	
Daily sick - -	117·0	
Admissions -	2,073·3	per mille.
Deaths - -	11·1	

The sickness among the troops at Jacobabad is always great, and the returns of the last four years show that more than half the amount of sickness is occasioned by malarious fever.

The whole cantonment is intersected with watercourses in connexion with the Indus, and, as recorded in the report for 1865, "the ground of the station is "becoming more fully charged with moisture, and at a spot where formerly water "was not found at a depth of 35 feet, it was found last year (1864) at 20 feet from "the surface."

This rising of the subsoil water-line requires notice in connexion with the greatly increased prevalence of fever among the troops at Jacobabad during the last few years. In the year 1868 there were 2,740 admissions to hospital from fever, out of an average number of 2,169 men.

Fevers and ulcers were the affections mostly suffered from.

The recruits for the local regiments are said to be similarly obnoxious to the ailments specified; and the senior medical officer has observed that men from other parts of India are much more susceptible to fever during the first year of their sojourn at Jacobabad than subsequently; and that "strangers almost invariably "suffer from ulcers during their first year's residence here."

The trees in cantonment had been pruned of branches to a height of 15 feet from the ground.

PRESIDENCY DIVISION.

Division.

Average Strength, 3,006. Daily Sick, 146·9.

—	All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
Admissions	4,065	3	1,683	113	168	178	5	9	2	121
Deaths	40	2	9	3	2	6	—	2	—	—
Ratio per Mille.										
Admissions	1,352·3	1·0	559·9	37·6	55·9	59·2	1·7	3·0	0·7	40·3
Deaths	13·3	0·7	3·0	1·0	0·7	2·0	—	0·7	—	—

Bombay.

Average Strength, 2,179. Daily Sick, 105·8.

Admissions	2,693	3	1,071	60	126	170	5	7	2	2
Deaths	37	2	8	3	2	5	—	2	—	—
Ratio per Mille.										
Admissions	1,235·9	1·4	491·5	27·5	57·8	78·0	2·3	3·2	0·9	4·2
Deaths	17·0	0·9	3·7	1·4	0·9	2·3	—	0·9	—	—

There was much sickness among the men of the detachments temporarily located in Bombay; the ratio of mortality was also high. The unhealthy neighbourhood of both the Marine Battalion and Boree Bunder lines has frequently been dwelt upon.

The regiment occupying the former had, in the year 1868, 1,257, and that occupying the latter, 1,450 admissions to hospital per mille of average strength.

The large number of scurvy cases occurred mostly among men of the Marine Battalion, who had accompanied the pioneer force to Abyssinia in October 1867.

No men of the garrison proper suffered from cholera during the year. Two cases occurred in the instance of men of the Aden troop, who were passing through on sick leave to Sind.

Six cases of small-pox occurred.

On arrival from Abyssinia the men were much debilitated by exposure and want. One death occurred from scurvy. **Tunna.**

ADEN.

The sickness in 1868 was much greater than in the preceding year. The infantry regiment arrived in March of the previous year, and had acquired a general scorbutic taint, which rendered the men more subject to attacks of fever and bowel complaints.

Numerous admissions to hospital were occasioned by contusions from wearing "hard, ill-shaped, and badly-fitting boots;" a slight abrasion "became an irritable "ulcer."

The dry system of conservancy was attempted, "sand was used instead of earth "in the pans, and answered pretty well."

Many of the admissions into hospital from scurvy (154·8 per mille) were among men who had been on duty at Perim.

Troops Marching.

Average Strength, 506. Daily Sick, 28·5.

—	All Causes.	Cholera.	Fever.	Dysentery.	Diarrhœa.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
Admissions	893	—	403	12	83	83	2	—	—	12
Deaths	5	—	1	—	1	2	—	—	—	—
Ratio per Mille.										
Admissions	1,764·8	—	796·4	23·7	164·0	164·0	4·0	—	—	23·7
Deaths	9·9	—	2·0	—	2·0	4·0	—	—	—	—

Troops Marching for Abyssinian Expedition.

Average Strength, 2,087. Daily Sick, 83·5.

Admissions	4,487	—	1,653	353	420	96	3	6	4	75
Deaths	33	—	8	12	1	—	1	1	—	—
Ratio per Mille.										
Admissions	2,150	—	792·0	169·1	201·2	46·0	1·4	2·9	1·9	35·9
Deaths	15·8	—	3·8	5·7	0·5	—	0·5	0·5	—	—

SECTION III.

Cantonments.

Administration. Ahmedabad. Ahmednuggur. Belgaum. Kurrachee. Poona. Sholapoor.

The authority of Government was accorded for the Cantonment Act being brought into operation from the 1st July 1868 in the places marginally noted; and it was ordered that rules and regulations made under certain provisions of the Act should have force in all the cantonments specified.

The poverty of cantonment funds interfered with the satisfactory carrying out of all the measures contemplated.

Smallpox.

The prevalence of small-pox in the cantonment of Poona led to a representation of the great want of means of segregating cases of infectious and contagious disease, and to a proposition that small-pox hospitals should be established.

Government intimated that the means at disposal for such works would not suffice for the provision at present of the proposed hospitals.

Officers' lines.

With a view to obviate the inconvenience and discomfort occasioned by the position of outbuildings in adjoining enclosures, diagrams illustrative of suitable arrangements were prepared and submitted to Government.

The work of paving the circuit of wells in cantonments had been prosecuted; and it was believed that most of the wells which formed the chief sources of the supply of water to the troops in the Bombay Presidency were thus protected from pollution. Water supply.

No improvement had been effected in the mode of distribution of or of filtering water for drinking purposes.

It was understood that no steps had been taken for effecting contoured surveys of stations, or for giving practical effect, anywhere within the Bombay command, to the proposition for the establishment of Government farms in the vicinity of military cantonments. Survey of stations. Model farms.

The returns of death received from the various cantonments were duly tabulated. They deal with the general population residing within military limits as distinct from the military belonging to corps or departments. The results, as exhibited by the returns, are for the most part so very favourable, that they afford evidence that registration of deaths is far from satisfactorily carried out. Mortality.

The general population in cantonment limits seem to have been remarkably free from epidemic disease during the year 1868:—

At	Malligaum	-	23	deaths from cholera have been reported.	
„	Ahmednuggur		9	„	„ „
„	Mhow	-	9	„	„ „
and „	Kurrachee	-	1	„	„ „

Small-pox is reported to have caused—

	31	deaths in	Poona Cantonment.
	10	„	Malligaum.
	26	„	Nusseerabad.
and only	2	„	Bombay.

SECTION IV.

General Population.

In accordance with instructions from Government, (Resolution No. 1603, 26 May 1868, para. 8,) reports relative to Registration of Deaths had been rendered by most of the officers in charge of districts where such registration had been attempted. The variation of the death rate was notable as in the previous year, the same districts presenting the same extremes, viz.:— Registration of deaths.

Maximum	212 per 10,000 persons in the Canara Collectorate.
Minimum	33 per 10,000 persons in the Thur and Parkur Districts.

The mortality, generally, as shewn, is so small as to lead to the conclusion, either that the population must be considerably exaggerated, or that the systematic registration of deaths is very imperfectly carried out.

It is obvious from a perusal of the reports from the district officers that the population of each of the various districts is at present estimated by a very rough guess; while in the same reports it is pointed out that Death Registration is effected by the agency of uneducated men, and it is generally admitted to be far from accurate. Vital statistics.

But though the vital statistics of the general population of the Bombay Presidency as hitherto recorded are unquestionably erroneous, they may serve to illustrate the comparative prevalence of epidemic disease, and the comparative general state of the Public Health. The following table shows the reported number of deaths from cholera, small-pox, accident, or violence, and from all causes, for five years, but the actual figures are considered fallacious.

BOMBAY.

Names.	1865. Reported Population.	Accident or Violence.	Cholera.	Small-pox.	All Causes.	Ratio per mille.	1866. Reported Population.	Accident or Violence.	Cholera.	Small-pox.	All Causes.	Ratio per mille.
Bombay city -	—	—	—	—	—	—	—	—	—	—	—	—
Tanna - -	900,000	364	7,936	208	18,490	20·5	900,000	271	66	71	5,707	6·3
Surat - -	792,638	118	9,463	61	21,953	27·7	792,638	170	152	56	7,857	9·9
Ahmedabad (Duskrohee Talooka only).	—	—	—	—	—	—	845,047	118	140	51	4,674	5·5
Broach - -	—	—	—	—	—	—	—	—	—	—	—	—
Punch Mahals -	—	—	—	—	—	—	161,662	61	20	215	1,938	12·0
Kaira - -	586,606	126	5,800	242	15,973	27·2	586,606	183	176	43	7,948	13·5
Kandesh - -	822,476	576	14,598	289	26,665	32·4	822,476	183	61	123	6,858	8·3
Ahmednuggur -	1,252,789	672	15,609	498	34,961	27·9	1,252,789	582	809	133	13,528	10·8
Poona - - -	679,429	196	9,114	197	23,728	34·9	679,429	205	161	117	9,730	14·3
Sholapoor -	634,867	443	3,493	320	9,112	14·6	634,867	421	1,841	104	7,968	12·5
Sattara - -	858,022	420	6,878	85	29,277	34·1	858,022	360	1,134	49	17,797	20·7
Kulladghee -	563,123	361	3,055	546	9,959	17·7	563,123	209	3,896	499	14,298	25·4
Belgaum - -	707,537	167	1,247	532	12,490	17·7	707,537	198	1,962	352	13,197	18.6
Dharwar - -	782,465	356	1,191	1,297	18,086	23·1	782,465	283	11,192	393	24,925	31·8
Canara - -	394,040	170	327	224	8,664	22·0	361,013	304	859	126	8,155	22·6
Rutnagherry -	685,372	279	2,250	415	18,917	27·6	685,372	262	217	159	12,555	18·3
Kurrachee -	340,000	67	300	1	1,629	4·8	340,000	221	8	61	3,374	10·0
Hydrabad - -	630,300	144	1,850	6	4,122	6·5	630,000	197	1	120	4,925	7·8
Shikarpoor - -	650,304	14	37	26	934	1·4	650,300	25	—	44	1,782	2·7
Frontier Upper Sind.	47,955	25	—	—	603	12·5	47,955	17	—	31	643	13·4
Thur and Parkur	127,035	1	—	7	456	3·6	127,035	16	—	20	667	5·2
Total -	11,573,958	4,499	62,148	4,754	265,019	—	12,728,336	4,286	18,695	2,767	168,526	—
	Death ratio, 22·9 per mille.						Death ratio, 13·6 per mille.					

Names.	1867. Reported Population.	Accident or Violence.	Cholera.	Small-pox.	All Causes.	Ratio per mille.	1868. Reported Population.	Accident or Violence.	Cholera.	Small-pox.	All Causes.	Ratio per mille.
Bombay city -	816,562	259	128	1,058	15,790	19·3	816,562	303	218	1,127	15,911	19·4
Tanna - -	900,000	332	18	248	5,741	6·4	864,621	321	469	925	8,528	9·9
Surat - -	792,638	116	10	360	6,890	8·7	492,684	182	121	1,290	8,897	18·1
Ahmedabad (Duskrohee Talooka only).	845,047	107	11	98	4,856	5·7	236,782	73	10	9	4,530	19·1
Broach - -	—	—	—	—	—	—	164,893	47	10	113	2,531	15·3
Punch Mahals -	161,662	65	14	115	2,269	14·0	171,312	51	13	95	1,751	10·2
Kaira - -	586,606	202	161	436	10,697	18·2	649,145	192	87	356	9,676	15·0
Khandesh - -	822,476	174	37	514	10,902	13·4	1,024,156	210	553	1,486	12,853	12·7
Ahmednuggur -	1,252,789	341	88	886	10,642	8·5	995,585	505	1,802	1,269	16,227	16·3
Poona - -	605,638	191	9	1,000	9,677	14·2	623,949	217	686	1,599	11,351	18·2
Sholapoor - -	634,867	232	46	448	4,786	7·5	552,926	102	779	8,214	7,640	13·8
Sattara - -	858,022	290	33	379	13,567	15·8	972,431	225	657	1,896	17,472	18·0
Kulladghee -	563,123	235	47	447	6,105	10·8	691,425	158	320	687	8,433	12·2
Belgaum - -	780,358	168	4	887	10,582	14·9	780,358	172	363	220	10,666	13·7
Dharwar - -	782,465	296	6	816	13,306	22·1	816,980	278	2	1,645	16,750	20·0
Canara - -	361,013	183	74	45	8,151	22·6	361,013	197	66	77	7,664	21·2
Rutnagherry -	685,372	243	124	263	9,920	14·5	681,147	225	159	148	9,068	13·3
Kurrachee - -	340,000	191	557	86	3,822	11·2	340,000	172	23	357	3,035	8·9
Hydrabad - -	630,000	307	135	419	5,504	8·7	596,465	367	—	196	5,250	8·8
Shikarpoor - -	650,300	138	3,467	226	8 287	12·7	650,300	140	—	470	5,176	7·9
Frontier Upper Sind.	47,955	21	191	66	867	18·1	85,000	29	—	4	570	6·7
Thur and Parkur	127,035	3	—	5	347	2·7	225,000	1	—	4	736	3·3
Total -	13,243,928	4,094	5,160	8,802	162,798	—	12,792,734	4,167	6,338	15,187	184,715	—
	Death ratio, 12·2 per mille.						Death ratio, 14·4 per mille.					

Attention is again invited to the large number of deaths by drowning in wells and tanks.

The Superintendent of Vaccination states that he is absolutely certain that many deaths are attributed to small-pox instead of to measles, scarlatina, and other skin diseases, which may account for the reported increase of mortality under that head. The number of vaccinations in the Presidency was considerably greater in 1868 than in any previous year; but the number is not given, nor had information been obtained as to the relation between the deaths from small-pox among those vaccinated and those not vaccinated.

RETURN of CASUALTIES by VIOLENCE among the CIVIL POPULATION reported by the SUPERINTENDENTS of POLICE in the different COLLECTORATES of the BOMBAY PRESIDENCY during the YEAR 1868.

STATIONS.	MURDER.						HOMICIDE.			SUICIDE.					
	Undetected.			Detected.						By Drowning.				By other means.	
										In Well.		In Tank.			
	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Men.	Women.	Men.	Women.
Tanna	—	—	—	5	3	5	1	—	—	4	5	—	1	11	4
Surat	3	1	—	11	4	2	8	2	—	5	6	2	—	4	3
Kaira	3	1	—	4	4	1	—	—	—	5	13	1	—	5	11
Ahmedabad	5	3	1	7	2	1	—	—	—	5	19	—	1	6	11
Punch Mahals	—	—	—	2	2	—	—	—	—	1	4	—	—	3	8
Khandeish	—	2	—	1	—	—	1	—	2	4	4	1	1	—	1
Ahmednuggur	—	—	—	1	1	1	—	—	—	3	7	—	—	1	2
Poona	—	—	—	3	2	—	—	—	1	5	11	—	1	13	3
Sholapoor	—	—	—	6	2	1	1	—	—	5	6	—	—	4	4
Nassick	1	—	—	—	1	1	—	—	—	1	—	—	—	—	—
Sattara	—	—	1	5	1	—	2	—	—	3	19	—	—	12	4
Kulladghee	1	1	—	3	2	—	1	1	—	6	13	—	—	16	6
Belgaum	—	—	1	4	3	4	—	—	—	6	15	5	6	17	7
Dharwar	2	—	—	3	4	1	3	—	—	18	23	2	7	17	4
Canara	—	—	—	—	—	—	1	—	1	1	3	1	3	11	10
Rutnagherry	1	—	—	2	1	2	—	1	—	—	1	—	—	4	6
Kurrachee	1	—	2	14	1	—	1	1	—	—	—	—	—	6	9
Hydrabad	1	1	—	6	4	3	2	3	—	—	—	2	—	3	11
Shikarpoor	—	1	—	7	9	—	4	2	—	—	1	—	—	5	6
Upper Sind	—	—	—	7	2	—	—	—	—	—	—	—	—	2	—
Thur and Parkur	—	—	—	—	—	—	—	—	—	—	—	1	—	2	—

(*continued*).

STATIONS.	Killed by Wild Beasts.	Killed by Snake-bite.	Died from Hydrophobia.	ACCIDENTAL DEATHS.								Found dead. Cause uncertain.			Total Deaths.	Attempted Suicide.			
				By Drowning.						In Sea or River.	From other known Cause.								
				In Well.			In Tank.												
	Persons.	Persons.	Persons.	Men.	Women.	Children.	Men.	Women.	Children.	Persons.	Persons.	Men.	Women.	Children.		Men.	Women.	Men.	Women.
Tanna	11	49	—	38	77	8	20	7	4	51	43	—	—	—	347	—	—	1	—
Surat	5	76	7	4	28	18	10	1	14	53	96	2	2	4	371	2	—	—	—
Kaira	—	96	12	4	20	10	5	4	26	23	100	2	2	1	353	2	—	—	—
Ahmedabad	1	48	2	9	22	10	1	1	25	15	93	1	—	1	290	—	—	—	—
Punch Mahals	2	29	5	2	3	1	2	—	2	6	26	1	1	—	100	—	—	1	—
Khandeish	4	16	4	20	34	16	2	2	3	41	52	1	—	—	212	—	2	1	—
Ahmednuggur	—	6	—	16	26	7	5	1	2	9	29	—	—	—	117	—	—	—	—
Poona	—	23	9	11	33	28	2	2	2	35	41	3	4	—	232	—	4	—	—
Sholapoor	—	7	1	22	35	28	2	1	1	6	23	2	—	2	159	3	1	1	—
Nassick	—	5	—	8	7	6	2	—	1	10	21	—	—	—	64	—	—	—	—
Sattara	7	28	3	22	47	44	2	—	2	40	69	—	—	—	311	4	1	3	1
Kulladghee	—	12	2	4	22	20	1	—	2	8	45	1	1	—	168	—	—	—	—
Belgaum	1	25	—	11	29	20	7	3	10	17	64	1	—	—	256	—	—	—	—
Dharwar	1	21	2	8	16	12	10	15	26	19	54	3	1	—	282	—	—	—	—
Canara	4	18	—	—	8	10	7	4	9	34	40	—	—	—	165	—	—	—	—
Rutnagherry	7	51	—	—	9	10	—	—	3	76	61	—	—	1	236	—	—	—	—
Kurrachee	2	70	17	1	—	5	21	8	37	72	61	—	—	—	329	—	—	5	1
Hydrabad	1	162	17	4	2	10	17	11	68	23	120	5	—	2	478	1	—	3	1
Shikarpoor	4	54	4	1	1	2	14	2	27	66	51	—	1	—	262	—	1	2	3
Upper Sind	—	6	—	1	1	1	4	—	—	3	2	—	—	—	29	—	—	—	1
Thur and Parkur	3	25	3	5	2	—	3	1	8	—	—	—	—	—	53	—	—	—	—

BOMBAY.

Cholera.

Cholera was present at some period of the year generally throughout the Presidency, excepting Sind. In the Kurrachee Collectorate only of that Province a few cases occurred during January.

Ahmednugger appears to have been the district primarily visited, and most severely ravaged by the disease, which extended into and caused large mortality in the contiguous Khandeish district northward, and the Poona, Sholapoor, Sattara, Kulladghee, and Belgaum districts, southward.

August, September, October, and November were the months in which the disease was most rife; and thus its period of greatest prevalence in 1868 corresponded with that of epidemic intensity in Sind in 1867.

In December the disease continued unabated in Chickodee, Belgaum; Kurrar, Sattara; and Moorbad, Tanna.

An effort was made to track the disease in its epidemic course from its entrance into the Ahmednuggur Collectorate; but the circumstances of sporadic fatal cases of cholera constantly occuring in the Ahmednuggur and other districts, and the impossibility of obtaining trustworthy information, rendered the attempt totally futile.

Government Resolution, Military Department, No. 5,373, of 28th October 1868.

Where cases of cholera have presented themselves throughout the year in a district of country, and under the circumstances of a want of competent observers and other means of obtaining accurate information, it is not feasible to frame a map exhibiting the dates of outbreak and disappearance, or the exact course of the disease. A map has been prepared, and is appended, which is intended to illustrate, by intensity of shading and by figures, the comparative prevalence of cholera in the various Talooka divisions in which it has prevailed in this Presidency. It has been found necessary to draw arbitrary lines of intensity, and to group the various numbers of fatal cases reported to have occurred in the separate Talookas.

The system followed is specified on the face of the map, which will thus in itself convey a general impression of the cholera history of the year.

Fairs. Pilgrimage.

The state of health in assemblages of people at *Fairs* and *Jatras* during the year 1868 was satisfactory. Conservancy arrangements continued to be enforced at such gatherings, and no special sickness seems to have been propagated by them. It was understood that widening of the door of the Pundhurpore temple had been effected.

A system of giving bills of health to ships sailing from Bombay to ports in the Red Sea had been established.

City of Bombay.

The prevalence of venereal disease among the seafaring community led to a proposition that a "Contagious Diseases Act" should be framed for Bombay.

Closing a number of the burial grounds within the City of Bombay was a feature of sanitary improvement during the year.

Return of Deaths of the Bombay Presidency for the Year 1868.

	Reported Population.	Area in square miles.	Ratio of mortality per mille.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other causes.		All causes.	
				Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Northern Division	3,603,593	30,447	13·5	660	603	2,279	1,995	15,888	12,801	3,121	2,282	601	475	4,552	3,509	27,101	21,665
Southern Division	6,475,814	596,366	16·2	2,576	2,258	4,368	4,387	28,314	24,245	6,566	5,273	1,095	984	13,459	11,746	56,378	48,893
Sind Division	1,896,765	48,782	7·8	14	9	603	428	6,297	4,639	247	155	511	198	1,003	663	8,675	6,092
Total	11,976,172	675,595	14·8	3,250	2,870	7,250	6,810	50,499	41,685	9,934	7,710	2,207	1,657	19,014	15,918	92,154	76,650

Births and Deaths reported in the Civil Population in the Island of Bombay during the Year 1868.

Population by Census of 1864— Males 530,450 Females 286,112 = 816,562	Still-born.	Cholera.	Small-pox.	Fever.	Accident or Violence.	Other Causes.	All Causes exclusive of Still-born.	Births.
Bombay	563	218	1,127	5,498	303	30	15,911	3,589

Death ratio, 19·4 per mille. Birth ratio, 4·4 per mille.

SECTION V.

Jails.

A table is given of comparative mortality in the various Jails throughout the Presidency for the four years during which returns have been furnished to the Sanitary Department. The improvement in the general health of the prisoners during the years 1866 to 1868, as indicated by the test of the rate of mortality among them, is very apparent. In 1866, however, there was an exceptionally large mortality in Hydrabad and Kaira Jails.

Cholera prevailed in the Surat Jail in November and December; there were 21 cases, and six deaths. One case occurred in Dhoolia Jail, and one fatal case at Yerrowda in September. The prisoners in all the other Jails of the Presidency seem to have had immunity from the disease.

Small-pox seems to have occurred in five instances among the jail population during the year, and to have proved fatal in one case at Shikarpoor.

Scurvy.—Twenty-six cases of illness are entered under this head, and four deaths. It seems probable that those suffering were affected before being received into the jail.

Atrophy contributed 57 cases, nine of which were fatal. The causes of this affection are probably to be sought in a study of the effects of imprisonment as acting on mental affinities, and as interfering with natural habits and customs.

To these affections are attributable, as in former years, the greatest sickness and mortality; and the fact, in its theoretical aspect, urges upon notice increased attention to subsoil and surface drainage works, and to careful conservancy. Fever and bowel affections.

Mortality in Jails.

	1865.			1866.			1867.			1868.		
	Average Strength.	Deaths from Cholera.	Deaths from all Causes per Mille.	Average Strength.	Deaths from Cholera.	Deaths from all Causes per Mille.	Average Strength.	Deaths from Cholera.	Deaths from all Causes per Mille.	Average Strength.	Deaths from Cholera.	Deaths from all Causes per Mille.
Jails proper.												
Bombay	455	3	24·2	407	—	9·8	425	—	11·8	462	—	4·3
Surat	219	4	82·2	157	—	76·6	156	—	19·2	187	6	58·8
Kaira	290	4	48·3	201	—	164·2	162	—	19·6	103	—	9·7
Ahmedabad	520	14	265·4	394	1	89·0	298	—	20·1	352	—	14·2
Rajkote	48	1	20·8	60	—	16·6	95	—	10·5	87	—	—
Dohud	52	—	192·3	194	—	61·9	149	—	33·6	143	—	35·0
Dhoolia	329	2	33·4	245	—	24·2	242	—	4·1	257	—	15·6
Ahmednuggur	301	3	46·5	187	1	42·2	163	—	6·1	163	—	6·1
Poona	354	5	65·0	415	2	31·3	343	—	26·2	342	—	26·3
Sattara	190	—	15·8	134	—	37·3	132	—	15·2	152	—	—
Kolapoor	105	—	38·1	136	1	29·4	121	—	16·5	142	—	35·2
Sholapoor	156	—	19·2	122	—	8·2	127	—	—	118	—	—
Kulladghee	50	—	—	162	—	18·5	133	—	37·6	123	—	40·6
Dharwar	529	2	13·2	475	—	44·2	301	—	6·6	338	—	17·8
Sawuntwaree	36	—	—	38	—	—	34	—	58·8	38	—	26·3
Rutnagherry	256	—	31·2	212	—	66·0	158	—	25·3	140	—	42·8
Tanna	333	2	51·1	287	—	31·4	356	—	14·5	348	—	25·9
Kurrachee	489	1	36·8	637	—	29·8	452	—	8·8	388	—	12·9
Hydrabad	405	8	256·8	324	—	240·7	337	—	29·7	299	—	30·1
Shikarpoor	607	—	29·2	524	—	63·0	538	—	78·1	599	—	16·7
Aden	136	2	36·8	167	—	18·0	169	—	11·8	196	—	40·8
Honore	174	7	63·2	35	—	—	—	—	—	—	—	—
Total	6,044	58	72·4	5,513	5	56·9	4,821	—	23·4	4,977	6	20·5
Subsidiary Jails, Gangs, and Lock-ups.												
Yerrowda	376	6	71·8	851	—	208·0	797	—	105·4	720	1	13·9
Belgaum	—	—	—	58	—	—	78	—	—	86	—	11·6
Thuggee Jail	57	2	87·7	—	—	—	—	—	—	—	—	—
Bukkur	73	—	68·5	—	—	—	—	—	—	—	—	—
Carwar	173	—	5·8	132	—	7·6	170	1	29·4	159	—	12·6
Thur and Parkur	137	—	7·3	177	—	11·3	389	—	59·1	389	—	30·9
Mitrow Canal	122	—	82·0	96	—	93·7	95	—	168·4	—	—	—
Sadra	3	—	—	6	1	166·7	9	—	—	11	—	90·9
Ramjugah	34	—	29·4	—	—	—	—	—	—	—	—	—
Sukkur	—	—	—	318	—	91·2	258	1	69·8	253	—	19·8
Dhooliakote	—	—	—	—	—	—	327	—	—	357	—	5·6
Kundaree	—	—	—	—	—	—	—	—	—	21	—	95·2
Total	975	8	51·2	1,638	1	133·7	2,123	2	68·8	1,996	1	17·5

BOMBAY.

Sickness and Deaths in Jails in 1868.

	Average Number of Prisoners.	Daily Number of Sick.	Admissions into Hospital during the Year.	Deaths from all Causes.	Deaths from: Cholera.	Small-pox.	Fever.	Dysentery.	Diarrhœa.	Hepatitis.	Icterus.	Scorbutus.	Phthisis.	Atrophia.	Deaths from all Causes per Mille.
Jails proper.															
Bombay	462	6·4	191	2	—	—	—	—	1	—	—	1	—	—	4·3
Surat	187	8·2	256	11	6	—	1	2	—	—	—	—	—	2	58·8
Kaira	103	4·7	244	1	—	—	—	—	1	—	—	—	—	—	9·7
Ahmedabad	352	8·6	337	5	—	—	—	—	1	—	—	—	—	—	14·2
Rajkote	87	3·8	123	—	—	—	—	—	—	—	—	—	—	—	—
Dohud	143	3·0	123	5	—	—	—	—	—	1	—	—	—	1	35·0
Dhoolia	257	11·1	365	4	—	—	—	—	—	—	—	—	—	—	15·6
Ahmednuggur	163	7·3	346	1	—	—	—	—	—	—	—	—	—	—	6·1
Poona	342	5·0	133	9	—	—	—	—	2	—	—	1	—	2	26·3
Sattara	152	2·0	68	—	—	—	—	—	—	—	—	—	—	—	—
Kolapoor	142	9·0	389	5	—	—	—	4	1	—	—	—	—	—	35·2
Sholapoor	118	5·7	201	—	—	—	—	—	—	—	—	—	—	—	—
Kulladghee	123	6·3	168	5	—	—	—	—	—	—	—	—	—	1	40·6
Dharwar	338	6·6	188	6	—	—	1	—	1	—	—	—	—	1	17·8
Sawuntwaree	38	2·6	70	1	—	—	1	—	—	—	—	—	—	—	26·3
Rutnagherry	140	9·6	176	6	—	—	1	—	—	—	—	—	—	—	42·8
Tanna	348	11·1	339	9	—	—	3	2	1	—	—	—	—	—	25·9
Kurrachee	388	6·9	240	5	—	—	3	—	—	—	—	—	—	—	12·9
Hydrabad	299	3·3	83	9	—	—	2	—	2	—	—	—	1	—	30·1
Shikarpoor	599	16·7	558	10	—	1	7	—	—	—	—	—	—	—	16·7
Aden	196	7·8	294	8	—	—	1	2	—	—	—	1	1	1	40·8
Total	4,977	145·7	4,892	102	6	1	20	10	9	1	—	3	2	8	20·5
Subsidiary Jails, Gangs, and Lock-ups.															
Yerrowda	720	33·6	1,388	10	1	—	1	2	—	—	—	—	—	1	13·9
Belgaum	86	2·1	126	1	—	—	1	—	—	—	—	—	—	—	11·6
Carwar	159	7·1	282	2	—	—	—	—	—	—	—	1	—	—	12·6
Sukkur	253	8·5	308	5	—	—	2	—	1	—	—	—	—	—	19·8
Dhooliakote	357	8·2	249	2	—	—	—	1	—	—	—	—	—	—	5·6
Thur and Parkur	389	13·8	759	12	—	—	7	—	—	—	1	—	—	—	30·9
Sadra	11	0·7	18	1	—	—	—	—	1	—	—	—	—	—	90·9
Kundaree	21	1·2	50	2	—	—	1	—	—	—	—	—	—	—	95·2
Total	1,996	75·2	3,180	35	1	—	12	3	2	—	1	1	—	1	17·5

TABLE showing AVERAGE STRENGTH and Ratios of SICKNESS and MORTALITY, among European and Native Troops, and among Prisoners, in various Stations, during the Year 1868. BOMBAY.

	Bombay.		Ahmedabad.		Deesa.		Belgaum.	
	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.
European Troops -	524	19·0	238	15·0	723	22	925	70·0
Native Troops - -	2,179	105·8	1,110	41·6	840	22	1,436	51·6
Prisoners - - -	462	6·4	352	8·6	—	—	86	2·1

	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.
EUROPEAN TROOPS.								
All causes - -	**1,049·6**	**1·9**	**1,668·0**	**16·8**	**951·6**	**5·5**	**1,111·3**	**11·9**
Cholera - -	—	—	4·2	—	—	—	—	—
Fever - -	480·9	—	348·7	—	236·5	1·4	114·6	1·1
Dysentery - -	59·2	—	16·8	—	6·9	—	78·9	3·2
Diarrhœa - -	15·3	—	33·6	—	27·7	—	37·8	2·2
Hepatitis and Icterus -	34·3	—	58·8	8·4	49·8	—	59·5	2·2
Venereal - -	66·8	—	306·7	—	203·3	—	424·9	—
NATIVE TROOPS.								
All causes - -	**1,235·9**	**17·0**	**1,202·7**	**3·6**	**915·5**	**6·0**	**904·6**	**9·7**
Cholera - -	1·4	0·9	—	—	—	—	—	—
Fever - - -	491·5	3·7	556·8	0·9	301·2	1·2	407·4	6·3
Dysentery - -	27·5	1·4	20·7	—	19·0	—	18·1	0·7
Diarrhœa - -	57·8	0·9	28·0	—	16·7	—	13·2	—
Hepatitis and Icterus -	3·2	0·9	2·7	—	6·0	—	3·5	—
Venereal - -	4·2	—	19·0	—	23·8	—	46·0	0·7
JAILS.								
All causes - -	**413·4**	**4·3**	**957·4**	**14·2**	—	—	**1,465·1**	**11·6**
Cholera - -	—	—	—	—	—	—	—	—
Fever - - -	93·1	—	346·6	—	—	—	302·3	11·6
Dysentery - -	41·1	—	59·7	—	—	—	46·5	—
Diarrhœa - -	51·9	2·2	36·9	—	—	—	11·6	—
Hepatitis and Icterus -	—	—	2·9	—	—	—	11·6	—
Venereal - -	39·0	—	22·7	—	—	—	11·6	—

BOMBAY.

	Aden.		Poona.		Kirkee.		Ahmednuggur.	
	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.
European Troops -	665	25·0	1,590	83·0	472	24·0	247	19·0
Native Troops - -	801	41·2	2,358	78·9	288	20·6	715	33·4
Prisoners -	196	7·8	342	5·0	—	—	163	7·3
	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.
EUROPEAN TROOPS.								
All causes - -	**756·4**	**15·0**	**1,300·6**	**16·4**	**1,273·3**	**25·4**	**2,161·9**	**20·2**
Cholera - -	—	—	0·6	0·6	12·7	8·5	16·2	12·1
Fever - - -	185·0	3·0	403·1	0·6	489·4	8·5	388·7	—
Dysentery - -	12·0	1·5	28·3	1·3	21·2	2·1	20·2	—
Diarrhœa - -	81·2	—	50·3	—	23·3	—	145·7	—
Hepatitis and Icterus -	24·0	3·0	49·7	3·8	44·5	—	68·8	—
Venereal - -	84·2	—	216·4	1·9	220·3	—	384·6	—
NATIVE TROOPS.								
All causes - -	**1,451·7**	**13·7**	**1,039·9**	**6·8**	**1,913·2**	**13·9**	**1,925·9**	**7·0**
Cholera - -	—	—	0·4	—	6·9	3·5	1·3	1·3
Fever - - -	392·0	1·2	493·2	1·6	1,194·4	—	1,135·7	2·8
Dysentery - -	69·9	1·2	25·4	0·8	55·5	6·9	21·0	—
Diarrhœa - -	68·7	—	41·1	—	86·8	—	42·0	—
Hepatitis and Icterus -	12·5	3·7	4·2	0·4	6·9	3·5	1·3	1·3
Venereal	27·5	—	28·4	—	69·4	—	28·0	—
JAILS.								
All causes - -	**1,500·0**	**40·8**	**388·9**	**26·3**	**—**	**—**	**2,122·7**	**6·1**
Cholera - - -	—	—	—	—	—	—	—	—
Fever - - -	408·2	5·1	213·5	—	—	—	423·3	—
Dysentery - -	40·8	10·2	17·6	—	—	—	30·7	—
Diarrhœa - -	35·7	—	8·8	5·9	—	—	85·9	—
Hepatitis - -	5·1	—	2·9	—	—	—	6·1	—
Venereal - -	15·3	—	5·9	—	—	—	67·5	—

	Sholapoor.		Asseerghur.		Mhow.		Neemuch.	
	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.
European Troops -	116	9·0	129	4·0	1,134	55·0	263	16·0
Native Troops - -	941	28·0	44	0·3	914	51·1	950	25·4
Prisoners - - -	118	5·7	—	—	—	—	—	—

	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.
EUROPEAN TROOPS.								
All causes - - -	**2,250·0**	**8·6**	**1,565·9**	**7·7**	**1,046·7**	**8·8**	**650·2**	**3·8**
Cholera - - -	—	—	—	—	—	—	—	—
Fever - - -	1,405·2	8·6	635·7	7·7	267·2	1·8	570·3	3·8
Dysentery - - -	8·6	—	7·7	—	20·3	—	26·6	—
Diarrhœa - - -	25·8	—	69·7	—	22·0	—	53·3	—
Hepatitis and Icterus -	77·6	—	62·0	—	22·0	—	87·5	—
Venereal - - -	43·1	—	85·2	—	200·2	—	220·5	—
NATIVE TROOPS.								
All causes - - -	**1,012·8**	**7·4**	**659·1**	—	**1,432·2**	**4·4**	**1,010·5**	**3·2**
Cholera - - -	—	—	—	—	—	—	—	—
Fever - - -	542·0	2·1	340·9	—	562·4	2·2	527·4	—
Dysentery - - -	5·3	—	—	—	25·2	—	8·4	—
Diarrhœa - - -	64·8	2·1	22·7	—	27·4	—	15·8	—
Hepatitis and Icterus -	2·1	—	—	—	5·5	—	3·2	—
Venereal - - -	15·9	1·1	—	—	49·2	—	14·7	—
JAILS.								
All causes - - -	**1,703·4**	—	—	—	—	—	—	—
Cholera - - -	—	—	—	—	—	—	—	—
Fever - - -	271·1	—	—	—	—	—	—	—
Dysentery - - -	59·3	—	—	—	—	—	—	—
Diarrhœa - - -	25·4	—	—	—	—	—	—	—
Hepatitis and Icterus -	—	—	—	—	—	—	—	—
Venereal - - -	67·8	—	—	—	—	—	—	—

BOMBAY.

	Nusseerabad.		Kurachee.		Hyderabad.		Jacobabad.		Surat.	
	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.
Europeon Troops -	635	28·0	750	28·0	335	8·0	—	—	—	—
Native Troops - -	925	38·6	758	19·0	906	26·0	2,169	117·0	674	30·6
Prisoners - -	—	—	388	6·9	299	3·3	—	—	187	8·2
	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.
EUROPEAN TROOPS.										
All causes - -	**1,111·8**	**11·8**	**960·0**	**21·3**	**704·5**	**11·9**	—	—	—	—
Cholera - - -	—	—	—	—	3·0	—	—	—	—	—
Fever - - -	187·4	—	246·7	—	98·5	3·0	—	—	—	—
Dysentery - -	15·7	3·1	26·7	—	11·9	—	—	—	—	—
Diarrhœa - -	67·7	—	53·1	1·3	26·9	—	—	—	—	—
Hepatitis and Icterus	75·6	6·2	34·7	4·0	11·9	—	—	—	—	—
Venereal - - -	229·9	—	141·3	—	104·5	—	—	—	—	—
NATIVE TROOPS.										
All causes - -	**1,333·0**	**8·6**	**849·6**	**9·2**	**938·2**	**7·9**	**2,073·3**	**11·1**	**1,660·2**	—
Cholera - - -	—	—	4·0	—	—	—	—	—	—	—
Fever - - -	720·0	3·2	423·5	1·3	243·9	1·1	1,263·2	1·8	685·5	—
Dysentery - -	13·0	—	18·5	—	17·7	2·2	15·2	0·5	74·2	—
Diarrhœa - -	60·5	1·1	25·1	—	23·2	—	34·1	0·5	34·1	—
Hepatitis and Icterus	5·4	—	5·3	—	13·2	1·1	12·0	0·9	3·0	—
Venereal - -	22·7	—	34·3	—	112·6	—	29·5	—	35·6	—
JAILS.										
All causes - -	—	—	**618·6**	**12·9**	**277·6**	**30·1**	—	—	**1,363·6**	**58·8**
Cholera - - -	—	—	—	—	—	—	—	—	117·6	32·1
Fever - - -	—	—	273·2	7·7	83·6	6·7	—	—	315·5	5·3
Dysentery - -	—	—	33·5	—	20·1	—	—	—	160·4	10·7
Diarrhœa - -	—	—	23·2	—	30·1	6·7	—	—	181·8	—
Hepatitis and Icterus	—	—	12·9	—	—	—	—	—	5·3	—
Venereal - -	—	—	15·5	—	6·7	—	—	—	58·8	—

	Rajkote.		Dhoolia.		Sattara.		Kulladghee.		Dharwar.	
	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.	Average Strength.	Daily Sick.
European Troops -	—	—	—	—	—	—	—	—	—	—
Native Troops -	836	15·0	576	14·6	181	12·0	73	2·0	604	29·9
Prisoners - -	87	3·8	257	11·1	152	2 0	123	6·3	338	6·6

	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.	Sickness per mille.	Mortality per mille.
EUROPEAN TROOPS.										
All causes - -	—	—	—	—	—	—	—	—	—	—
Cholera - -	—	—	—	—	—	—	—	—	—	—
Fever - - -	—	—	—	—	—	—	—	—	—	—
Dysentery - -	—	—	—	—	—	—	—	—	—	—
Diarrhœa - -	—	—	—	—	—	—	—	—	—	—
Hepatitis and Icterus	—	—	—	—	—	—	—	—	—	—
Venereal - -	—	—	—	—	—	—	—	—	—	—
NATIVE TROOPS.										
All causes - -	**843·3**	**1·2**	**840·3**	**8·7**	**1,977·9**	**11·0**	**8,904·4**	—	**1,400·7**	**1·7**
Cholera - -	—	—	12·2	6·9	—	—	—	—	—	—
Fever - - -	445·0	—	291·7	—	988·9	—	328·8	—	445·4	—
Dysentery - -	10·8	—	20·8	—	16·6	5·5	—	—	26·5	—
Diarrhœa - -	12·0	—	19·1	—	99·4	—	13·7	—	18·2	—
Hepatitis and Icterus	—	—	6·9	—	5·5	—	—	—	5·0	—
Venereal - -	17·9	—	34·7	—	2·7	—	13·7	—	49·7	—
JAILS.										
All causes - -	**1,413·8**	—	**1,420·2**	**15·6**	**447·4**	—	**1,365·8**	**40·6**	**556·2**	**17·7**
Cholera - -	—	—	3·9	—	—	—	—	—	—	—
Fever - - -	586·1	—	389·1	—	197·4	—	504·1	—	281·1	3·0
Dysentery - -	11·5	—	25·0	—	32·9	—	32·5	—	3·0	—
Diarrhœa - -	—	—	73·9	—	26·3	—	40·6	—	47·3	3·0
Hepatitis and Icterus	—	—	7·8	—	—	—	—	—	3·0	—
Venereal - -	11·5	—	89·5	—	46·0	—	73·1	—	14·7	—

BOMBAY. MEMORANDUM showing the AMOUNT of SICKNESS and MORTALITY in the BRITISH TROOPS, ABYSSINIAN EXPEDITIONARY FORCE, during the entire CAMPAIGN.

Average strength - - -	2,688·8
Average daily sick - - -	156·62
Ratio per cent. of sick to strength -	5·8
Do. do. deaths do. - -	1·3

CASUALTIES.

Officers—	
Highlands - - - - -	7
Lowlands - - - - -	4
Total - -	11
Men—	
Highlands - - - - -	17
Lowlands - - - - -	20
Total - -	37

OFFICERS' DEATHS, caused as follows :—

Diseases.	No.	Remarks.
Dysenteria acuta - - -	2	
Insolatio - - - -	2	
Vulnus sclopetarium - - -	2	One accident; one suicide.
Morb. valv. cordis - - -	1	
Apoplexia - - - -	1	
Emersio - - - -	1	Accidental drowning.
Febris continua - - -	1	
Angina pectoris - - -	1	
Total - -	11	

MEN'S DEATHS.

Diseases.	Number.
Dysenteria acuta - - - - - -	17
„ chronic - - - - - -	1
Vulnus sclopetarium - - - - - -	1
Insolatio - - - - - - -	8
Febris remit. - - - - - - -	1
„ intermitt. - - - - - -	1
„ typhoid - - - - - - -	1
„ continua - - - - - - -	1
Hepatitis acuta - - - - - - -	1
Aneurisma - - - - - - -	1
Nephria - - - - - - -	1
Nephritia - - - - - - -	1
Verrenatio - - - - - - -	1
Paralysis - - - - - - -	1
Total - - -	37

DISTRIBUTION of CASUALTIES by CORPS.

Corps.	Officers.	Men.
Royal Artillery	1	5
Royal Engineers	1	2
3rd Dragoon Guards	—	2
1st Battalion 4th King's Own Regiment	1	11
26th Cameronians	—	3
33rd Regiment	3	4
45th Regiment	1	8
Army Hospital Corps	—	2
Medical Staff	2	—
Military Store Staff	1	—
Veterinary Staff	1	—
Total	11	37

SANITARY REFORM.

In reply to the Despatch from the Secretary of State (Sir Stafford Northcote) of the 23rd November 1868, given in *extenso* at page 12 of the Sanitary Memorandum for 1868, requesting information on various points indicated as to the progress made in sanitary improvement in India, the following General Report is submitted by Colonel H. W. B. Bell, R.E., Sanitary Commissioner, bearing date 18th September 1868:—

GENERAL REPORT ON THE PROGRESS MADE IN SANITARY IMPROVEMENT.

INTRODUCTORY.

1. In noticing the progress made in Sanitary Improvement in the Bombay Presidency the Sanitary Commissioner can deal only with generalities. To enter upon particulars, and to define the stage of progress at which works have arrived, would presuppose the possession of information which is held only by Local Authorities or Executive Officers, and entail a treatment of the subject as pertaining to stations or places.

MILITARY.

2. "The Regulations . . . found at page 44 of the 'Suggestions in regard to "'Sanitary works required for improving Indian Stations,' published in 1864," have special reference to the duties of inspecting Medical Officers.

EUROPEAN TROOPS.

3. *Returns and Reports.*—Copies of the weekly Statistical Returns of sickness and mortality and of the monthly Sanitary Reports rendered by Medical Officers in charge of British troops are furnished to the office of the Sanitary Commissioner, and information is thus obtained of the amount of disease and mortality among the troops; of the general sanitary condition of barrack premises and cantonments, and of the circumstances of the soldier and his family in respect of lodging, of lavatory, latrine, and cooking accommodation, and of dietary, dress, duties, and sources of amusement. The monthly Sanitary Reports likewise pass under review of the authorities in the Medical, Adjutant-General's, and Quartermaster-General's Departments.

4. Opportunity is thus afforded of prominently bringing to notice and of applying remedies to defects as they arise, and of rectifying as far as practicable what seems in need of correction.

5. In the Annual Sanitary Reports for the Presidency the state of the Public Health and the condition of the soldier are treated of in considerable detail.

6. *Barracks.*—Standard plans have been carefully prepared, and new constructions in accordance therewith are in progress at several stations. The principle of providing for all dormitories on an upper floor has been held in view, and the lower or ground

BOMBAY. floors on well-raised plinths have been appropriated for day, dining, orderly, office rooms, and such like accommodation. A plan prepared by the present Sanitary Commissioner for Bombay and providing on an upper floor for the accommodation of all the occupants of a barrack has not been followed. It has been ruled on the score of economy that one Serjeant must be lodged in the transept of the ground floor.

Accommodation has meanwhile been much increased by the erection of temporary structures, and it was ordered in 1865 that there should be inscribed on the door of each room the number of men it could legitimately contain.

Considerable alterations have been made, and benefit has resulted by opening new doors, and converting windows into doors in old barracks. After consideration of the opinions of many officers consulted on the subject, the conclusion has been come to that new barracks on the plains should have all doors and no windows, but that at hill stations there should be a proportion of windows according to local circumstances.

The ventilation of the ground floors of barracks is shown in the approved plans to be secured by vertical air shafts contained in the thickness of the walls.

Verandahs have in many old buildings been opened up by the clearing away of partitions put up for affording ablutionary convenience, &c. In new constructions the front and the windward half of end verandahs are kept clear, and even in rear verandahs a clear width of 4′ is kept free of all enclosure walls.

Openings, either continuous or at suitable intervals, have been provided in the roof ridge of many structures, and ventilation has thereby been greatly promoted.

Plank ceilings are given to new barracks. Detailed plans of an approved construction for entire roofing, with ridge ventilation arrangements complete, have been prepared.

Fire-places on an approved plan in general accordance with Plate XIII. of the "Suggestions" are provided in all new barracks at stations where it is thought they may be wanted.

Punkahs and wetted tatties are made use of in the hot weather in barracks at stations where at certain seasons such cooling devices are considered necessary.

7. *Lavatory* conveniences have been greatly increased by the provision or appropriation of places for the purposes of ablution, and approved plans for new lavatory structures have been prepared.

A supply of water by gravitation, shower-baths, and fixed basins and footpans, with supply, overflow, and discharge pipes, have been provided in some barrack lavatories at Poona; and it has been stated that the convenience was great, and the working satisfactory. In the meantime, however, it is understood that every soldier is about to be furnished with a portable basin.

8. *Latrines* have been generally altered to admit of dry conservancy being practised, and it is reported that the system works satisfactorily. An approved plan of barrack latrine has been prepared.

9. *Urinary* sheds have been erected within a few paces of the ends of barracks, and due provision has been made for such convenience in semi-detached wings in new barracks.

10. *Cookhouses.*—Extended and improved accommodation has been provided, and the means of cooking are reported to be generally ample.

It is not known that any steel ovens or boilers have been fitted in cookhouses, but the approved plans which have been prepared and circulated for guidance contemplate the introduction of such conveniences.

11. *Washhouses and Laundries.*—There are no such buildings; and there are few, if any, stations where the water supply is sufficiently abundant to allow of clothes washing being effected systematically in the vicinity of barracks.

Laundries are *desiderata* at stations where the rainfall is great, and washing machines, in convenient connection with family quarters, would probably prove a boon.

12. *Recreation and Amusement.*—Gymnasia have been established at various stations, and an instructor of gymnastics has been appointed.

It is understood that gymnastic exercises are practised under serjeant instructors in corps, and that every practicable facility is afforded for the amusement and healthy employment of soldiers.

Accommodation for the practice of gymnastics is, in some cases at least, ordered to be provided in the ground floors of new barracks. Such provision will be objectionable if tan or sawdust be used for the floors.

Libraries and reading rooms, skittle and bowling alleys, and such like accommodation, on approved plans, have been provided in some instances, and are being so in others.

13. *Family Quarters.*—New buildings, according to an approved plan, have been constructed at several stations, and appreciation of the accommodation afforded therein has been expressed.

Improvements in the ventilation and in the outbuildings of family quarters have been in many instances effected.

14. *Warrant and Non-commissioned Officers' Quarters* have partaken in the improvements which have been generally effected in barrack buildings, and approved plans are followed in the new quarters which have been, or are being constructed.

15. *Officers' Quarters.*—The lodging of commissioned officers is in many instances very indifferent. There has been no amendment under this head.

Plans for commissioned officers' quarters have been prepared and approved by the Bombay Government; but it is believed that no building has been actually commenced on the approved plan.

A decision as to the form of accommodation to be provided seems to have not yet been arrived at by the Government of India.

16. *Hospitals.*—Most of the remarks offered with respect to barrack buildings are applicable to hospitals, as regards improved ventilation and subsidiary conveniences.

"Conclusions" as to the principles for guidance in hospital construction were published in 1866 by the Government of India, and were accompanied with specimen plans; but it is believed that no new hospital on an approved plan for European troops has yet been erected.

The existing hospital accommodation, in its amended condition, is in general sufficient. At some places—notably at depôts—a want of proper provision for the sick is at times felt, and tents have to be used. At a few stations only is there any hospital dormitory accommodation on an upper floor.

Detached buildings for the isolation of patients suffering from contagious diseases dangerous to life have, it is believed, been provided at some stations.

Native Troops.

17. The *lines* of native troops have, in several stations, been reconstructed on a much improved plan, and such work is now in progress.

18. *Latrines* have in many instances been provided for the convenience of native troops, and the *conservancy* of the vicinity of lines is understood to have undergone considerable improvement.

The copious use by natives of water for ablution, after alvine discharges, has hitherto prevented a satisfactory application of *dry conservancy* to the latrines of native regiments: but plans adapted to the desired object have been prepared, and recommended for adoption.

19. An inspection of the *statistical returns* of sickness and mortality among native troops is afforded to the Sanitary Commissioner, and *sanitary reports* are rendered annually by the Senior Medical Officer of native troops at each station.

Cantonments.

20. *Water Supply.*—No sytematic arrangement for examination of the water of stations has been made, but from time to time opportunity has been taken of forwarding to Bombay specimens of water from various places for analysis by the Chemical Analyser to Government.

21. In the matter of water for drinking and cooking purposes little or no improvement has been made in the mode of *distribution.* This is still generally effected by drawing by means of dipping a vessel into a storage receptacle.

The *conveyance* of water in tanned skins carried by men or pack animals is still almost universal.

22. The process of simply *straining* water for domestic use through a cloth is a common practice.

An imperfect attempt at the *filtration* of water for drinking is made in European soldiers' quarters by an arrangement of earthen vessels with perforations in their bases and containing sand and charcoal. The system works most unsatisfactorily.

Designs illustrative of a better process of filtration of water for general use have been prepared.

BOMBAY.

23. *Works* are in progress with the view of providing the station of Kirkee with a *supply* of good *water*. It is not known that actual operation has been taken in any other instance.

Sanitary Police.

24. *Boards of Health* have been instituted in every Cantonment, and these are charged with the duty of preserving cleanliness.

Scavenging establishments are retained, and it is believed that *public latrines* have been provided in some places.

Nuisances, however, are rife in all large bazars, and the condition of places where horses and cattle are kept in numbers is not satisfactory.

25. *Slaughter yards* have been established in the neighbourhood of some stations, and the cutting down of *exuberant vegetation* and the repair or the removal of *dilapidated buildings* are commonly attended to within cantonment limits.

Drainage.

26. *Eaves' gutters* have been provided to many old barracks, and the provision of them to all new constructions was contemplated. It has, however, been recently intimated by Government that roof gutters might be dispensed with in the new rest-house barracks at Deolalee.

27. *Subsoil drainage* has not been attempted, and *storm waters* are mostly carried away by natural channels. In bazars and towns the system of drainage is imperfect, and the construction of drains bad.

28. No steps are known to have been taken towards effecting *contoured surveys* of military stations.

29. *Cesspools* have been generally abolished in barrack premises, but large ones exist in many bazars.

30. *Manure yards* have been established in suitable localities in the neighbourhood of military stations. Large quantities of refuse matters are conveyed daily to the yards, and there has accordingly been much improvement in the mode of disposal of sewage.

31. *Model Farms.*—A proposition has been made to establish farms in the neighbourhood of stations with the object in part of providing for the disposal of refuse matters as manure, but it is not known that there is a probability of the proposal being carried in any instance into effect at an early period.

General Population.

32. There has been a considerable extension of *Municipal Government* in towns, and in those places where municipal authority is constituted sanitary measures are in a greater or less degree carried out.

33. No special *Health Establishment* is known to exist anywhere out of the city of Bombay.

34. Some attention is paid in general to the *removal of surface filth*, but in all places in India where people are massed sanitation is very defective. It is understood that in many villages filth more and more abounds. It is not known that any general system of conservancy exists in Mofussil villages.

35. *Scavenging establishments* are retained, and it is believed that *Public Latrines* have been provided in some places. *Nuisances*, however, are rife in all towns and villages, and the condition of places where horses and cattle are kept in numbers is not satisfactory.

36. *Subsoil drainage* has not been attempted, and *storm waters* are mostly carried away by natural channels. In bazars and towns the system of drainage is imperfect, and the construction of drains bad.

37. There is reason to believe that many of the poorer classes suffer from deficiency and unwholesomeness of *food*, and it is not known that any direct means are used to prevent the consumption of unwholesome food or drink.

38. *Disposal of the dead* is made, it is believed, in most places in an objectionable manner, the work of burning or of burial being badly effected.

39. A system of *Registration of Deaths* among the general population was instituted in 1865, and in 1867 an effort was made to trace the movement of and localize disease by dividing or sectioning for registration purposes districts and towns. It is unquestionable that the results attained and published in the Annual Sanitary Reports are very inaccurate.

40. The adoption of a *classification*, except in general terms, of *causes of death* among the people at large is obviously impracticable.

41. On occurrence of *epidemic cholera*, report thereof is forthwith made by the police, and measures of relief are taken by the supply of medical aid to any locality where the disease shows greater prevalence, and by a wide distribution of remedies.

42. Great improvement has been made in sanitary respect among assemblages of people at *fairs* or places of *pilgrimage*. A Sanitary Police is established, with whom lie the duties of directing the mode of encampment, the conservancy of the sources of water supply, the provision of field latrines, the prevention of commission of nuisances, the removal of filth, and the prohibition of sale of decayed fruit and other deleterous articles of food.

43. In the matter of *water* for drinking and cooking purposes little or no improvement has been made in the mode of distribution.

(Signed) HARRY W. B. BELL, Colonel, R.E.,
Poona, 18th September 1868. Sanitary Commissioner.

ABSTRACT OF ANNUAL REPORT OF THE MUNICIPAL COMMISSIONER OF BOMBAY FOR THE YEAR 1868.

A Draft Building Act, modelled on the Metropolitan Act, was rejected by the bench, and Mr. W. McClelland, C.E., was commissioned to draft another Act more suited to the circumstances of Bombay. His draft was ready for consideration. Proposed changes in the law.

The Finance and Standing Committee instructed the solicitors to prepare an entirely new Municipal Act. Their report was printed and circulated, and a select committee of Justices appointed, who held one or two meetings, but as it was hoped that the Government would undertake the revision of the Municipal Act, the committee has not sat again.

A general impression prevailing that these establishments were on an extravagant scale, a select committee of the bench was appointed to report on them, who after a lengthened investigation recommended a few and comparatively insignificant changes and reductions, which were approved by the bench. The committee also advised the separation of the departments of assessment and collection, and suggested an attempt to economise by partially amalgamating the health and engineering departments. Municipal establishments.

The appearance of cholera in October and November rendered it unadvisable to disturb the existing organization of the Health Department until the close of the year; since then the suggested amalgamation has been attempted, but proved a failure. The attempt had been previously made without success in Calcutta in 1867–68; the nature of the work, hours for labour, and class of labourers is dissimilar, and in England this truth has been recognized by a gradual separation of the two establishments and a general tendency to make the engineering department subservient to the health officer.

The marked improvement in Public Health in 1867 had been maintained during 1868. The Public Health.

In 1864,	25,015	persons	died, or 1 in	every 32	of the population.
In 1865,	28,631	,,	,,	28	,,
In 1866,	16,865	,,	,,	48	,,
In 1867,	15,500	,,	,,	52	,,
In 1868,	15,702	,,	,,	52	,,

The mean mortality for the preceding decade is 17,860, giving a decrease in the year 1868 of 2,158 deaths, without taking into account the great increase of population in late years.

The bench had decided on taking two censuses during 1868, but abandoned this idea, as the Supreme Government intimated their intention to have a general census in 1870.

Cholera, which had nearly disappeared in 1867, reappeared somewhat suddenly in October 1868, 207 deaths occurring in the last three months of the year.

The Health Department under Dr. Lumsdaine acted with the greatest promptness and energy, and the Municipal Commissioner considers it mainly owing to its exertions that the plague was stayed. He regrets that Government can spare no competent medical subordinates in a crisis of this kind. Should cholera again revisit Bombay with its former virulence, there would be only a few native private practitioners to assist, and no hospital accommodations whatever for cholera patients.

Although cholera did not appear till October its place was but too well supplied by small-pox, which killed 1,123 persons, "most, if not all of whom might have "been now alive if the principal citizens of Bombay had exerted their influence to "make vaccination compulsory." Fever still destroys one third. Improved drainage, more pure water, more ventilation, are considered the only remedies, but these seemed as far off as ever.

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The health department.

Dr. Hewlett's health failed under pressure of work at the end of the hot season of 1868, and he was compelled to leave for England.* His place was supplied by Dr. Lumsdaine, an abstract of whose report for 1868 is given at page 187.

The Municipal Commissioner fully concurs in Dr. Lumsdaine's high estimate of the services of Mr. Brunton, the chief superintendent of the health department. Mr. Crawford had requested Dr. Lumsdaine to report in what manner he would remodel the whole health establishment.

Markets and slaughter-houses.

The municipal markets on the Esplanade which were described in the last annual Report, were rapidly approaching completion, and it was hoped would bear comparison with the finest markets in Europe. The beef market and New Fort Market had been completed and opened during 1868, though there had been much delay in completing the latter, the private vegetable and fruit markets at Bholeshwar were burnt down, and the site purchased for a public market which was completed early in 1868; a plain substantial erection, roofed with iron, well ventilated, fenced with iron lattice, paved, and lighted with gas. There are 8 public and 17 private markets, exclusive of the public markets under construction.

The facilities given by the Grand Trunk and Pacific Railway Company had induced many up country gardeners to send produce to Bombay, and the markets had been unusually well supplied with fruit of all kinds from Nagpore and other distant points. The supply of good vegetables had, however, been far less than the demand, which day by day increases.

The class of meat brought to the markets had improved, and the number of animals slaughtered considerably increased.

Horned cattle slaughtered in 1867,	26,338.	In 1868, 32,410.
Sheep and goats „	300,313.	„ 386,400.

The average daily number of sheep slaughtered was 823 in 1867, and 1,060 in 1868, and of horned cattle in 1867, 72 per diem, in 1868, 90; but the demand for Abyssinian transports in harbour partially accounted for this increase.

On the 1st of January the butchers, with the exception of twelve, struck work without notice, in consequence of the new scale of slaughter-house fees; but finding they would be superseded by up-country men, the butchers petitioned for re-instatement, a deposit being made to be forfeited in case of future bad behaviour.

The Municipality have succeeded in establishing the cattle markets within their own premises and outside the limits of Bombay.

The market and slaughter-house fees, in 1868, amounted to Rs. 98,732 6 11.

Burial grounds.

The Sewree Cemetery was completed and handed over to the Senior Chaplain of the Protestant establishment on the 28th December, to be opened on the 1st January 1869, from which date all other Christian graveyards, Colaba excepted, were declared closed under the new Act. From unforeseen difficulties, the time for closing the Native Christian and Portuguese burial grounds has been extended.

The Calcutta municipal authorities, after trial, condemned their cinerator for the cremation of Hindoo dead.

A grant of a small burial ground has been made to certain Hindoo gentlemen and to the Jewish community.

Road and engineers' department.

The roads were stinted in the grant made for maintenance during the year, repairs were reduced to a minimum, and the roads suffered.

The following table contrasts the cost of the roads and rate of materials since 1863:—

Years.	Price of Road Metal per 100 Cubic Feet.	Price of Sandstone per 100 Cubic Feet.	Cost of Metalling, Scraping, and Improving.	Cost of Watering and Rolling.	Number of Water Carts used.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1863 -	8 2 0	Not known	1,04,706 0 0	28,912 0 0	No record.
1864 -	22 0 0	Ditto	3,62,129 0 0	60,622 0 0	Ditto.
1865 -	25 12 0	17 8 0	10,70,507 0 0	2,82,337 0 0	65
1866 -	20 0 0	13 0 0	3,93,261 11 11	1,47,541 11 1	100
1867 -	15 0 0	9 8 0	3,05,822 14 8	1,25,000 0 0	100
1868 -	11 6 0	6 6 0	2,61,834 13 6	94,430 9 1	100

* Dr. Hewlett returned to Bombay in November 1869.

The cost of Inspectorial Establishments is included in the figures for 1866, 1867, and 1868, but cannot be ascertained for previous years.

In commenting on the present expenditure on the roads as compared with former years, people are apt to forget that each year adds considerably to the area to be maintained and watered.

In 1867 upwards of six miles in length of entirely new roadway with an area of $29\frac{1}{12}$ acres were added to the public roads, and when to this is added the area of roads widened, about $47\frac{1}{4}$ acres, or 2,070,386 square feet, were added to the working area of the Bombay roads in the year. More water-carts were urgently needed.

Building department.

The great increase of building applications indicates the existence of much wealth among the masses. In 1868 there were 1,073 applications against 578 in the preceding year. The income of the building department for 1868 from fees, &c. amounted to Rs. 15,560 11 7, against a cost of establishment of Rs. 9660 8 10.

Lighting the town.

The lighting of the town has been practically at a stand-still, owing to the continued high price demanded by the gas company, and the falling-off of the lighting rate. No satisfactory arrangements could be arrived at with the gas company, so measures were adopted for lighting the town with kerosine as a substitute for gas.

The over-bridges.

The plans and estimates were sanctioned by the Government, and the three contributories (the Municipality, the Great Indian Peninsular Railway Company, and Elphinstone Land Company), and entrusted to Mr. Ormiston. Three bridges were opened for traffic during the year, and it was calculated that 50,000 persons cross the railway daily to the Elphinstone property, and 50,000 recross from it into the town, and 5,000 carts go in and out. All this traffic was previously condemned to struggle as best it could over the Great Indian Peninsular Railway at imminent risk to every individual engaged in it.

Drainage.

In a bench meeting in December 1867, sanction was given to the prosecution of a certain portion of the fort system of sewers to the sewers of Cammatteepoora, to a set of drains at Funuswady, and a smaller drain below Bellasis Bridge. These works progressed fairly during the year, but were at first stopped for want of bricks. Cammatteepoora district was to be completely drained before the next monsoon, and the neighbourhood had been entirely transformed; instead of reeking open earth ditches and swampy roads, there are well metalled properly curbed thoroughfares with surface and sewage drainage.

In the month of July Captain Tulloch, R.E., arrived at Bombay *en route* to Madras. He had been specially deputed to England by the Madras Government to study the various drainage systems in use in England and on the Continent; and the Secretary of State accordingly suggested that Bombay should avail itself of his presence, and invite him to prepare a scheme for the drainage of the city. The result of his labours is long ago before the public, and is now being discussed by a Government Commission, together with rival schemes. It is to be hoped that the battle of the drainage, so fiercely waged for so many months, may at least lead to some practical results.

Survey of Bombay.

Considerable progress was made during the year by Major Laughton, who has completed most of the more difficult parts of the town, and has supplied photo-zincographic sheets of many of the districts completed, which will be of incalculable value in all future operations in the town. Major Laughton's establishments maintained their high character, not a single complaint was made against them in the year 1868.

Vehar water-works.

Several extensions had been made during the year, and the dipping wells have been regularly cleansed. Mr. Aitken completed his surveys, and the result was placed before a Commission appointed by Government. The area of distribution has now increased so much that very serious consequences must ensue in the course of a year or two if something be not done to extend the water supply. The demand for increased supply and complaints of insufficient or defective service and actual scarcity have been loud and continuous.

The work-shops.

The workshops were made more efficient by a separation of the smithy from the carpenter's shop.

The smith's shop has paid and will pay better than anything in the yard. A new pattern iron nightsoil cart was designed by Mr. Macdonald, and, on approval, substituted for the old wooden cart; the results were held to be most successful. Mr. Macdonald also designed new water carts and scavengering carts which were gradually replacing the old ones.

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The maximum number of hands employed in the workshops in any one month was 489; the average is 250 men. Some idea of the amount of work executed during the year may be gathered from the fact that the value of material used was Rs. 1,50,157 5 10, and wages to the amout of Rs. 1,23,769 10 6 were paid for supervision and labour.

Many of the new pattern carts were being made for the Municipality of Surat, the Poona Municipality, the Inspector of Prisons, &c. The Municipal Commissioner speaks in high terms of Mr. Macdonald, superintendent of the workshops, to whom the present efficient condition is entirely due, and who is ever on the watch to effect some improvement or saving.

Panwell brick works.

These works had been carried on with great zeal and success by the superintendent, Mr. Hewson.

Assessment and collection of municipal rates and taxes, and of arrears, &c.

This subject is dealt with fully and in great detail to remove misapprehensions which existed on the subject.

The following table tabulates the details and exhibits at one glance the outstandings on 31st March 1869 for every rate and tax for every year:—

ABSTRACT of OUTSTANDING BALANCES of all RATES and TAXES for 1868 and previous Years on 31st March 1869.

—	1865.	1866.	1867.	1868.	Total.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
House rate - -	—	2,027 1 4	11,144 15 7	46,308 13 9	59,480 14 8
Police rate - -	—	3,939 13 3	11,778 4 3	13,552 13 6	29,270 15 0
Lighting rate -	—	618 9 5	5,546 9 1	10,084 10 5	16,249 12 11
Water rate - -	8,976 9 0	4,706 7 4	9,394 1 3	30,199 9 9	53,276 11 4
Wheel tax - -	—	263 0 0	1,647 0 4	10,935 3 10	12,845 4 2
Hallacore cess -	—	—	7,052 0 10	4,714 13 4	11,766 14 2
Total - Rs.	8,976 9 0	11,554 15 4	46,562 15 4	1,15,796 0 7	1,82,890 8 3

After consultation with the Finance Committee, extra agency was employed, and during the last half of the year very large recoveries were made. There yet remained a large amount of notices and warrants to be enforced, but these were being steadily worked off and progress was to be reported each quarter.

Revenues for the year 1868.

	RS.	A.	P.
The revised estimate for the year was - -	31,20,366	0	0
The actual revenue, including all sources up to 31st March 1869 - - - - -	30,31,658	9	10
Less than revised estimate by -	1,15,796	0	7

The following table shows the actual collections up to 31st March 1869, as compared with the revised estimate submitted with the Budget for 1869:—

—	Actual Collection. RS. A. P.	Revised Estimate for 1868 submitted with Budget for 1869. RS. A. P.	Actual Collection up to 31st March 1869. RS. A. P.
Public land conveyance licences up to 31st December 1868 - - -	12,240 4 0		
Ditto ditto 31st March 1869	6 0 0		
		13,200 0 0	12,246 4 0
Liquor licences - - -	- -	1,20,476 0 0	1,20,566 0 0
Market fees up to 31st December 1868 -	97,382 5 4		
Ditto 31st March 1869 -	1,049 9 7		
		1,00,000 0 0	98,431 14 11
Miscellaneous fees - - -	- -	47,000 0 0	47,867 5 5
Tobacco duty - - -	- -	1,37,000 0 0	1,36,915 4 8
Fines and penalties - - -	- -	10,000 0 0	11,848 9 5
	Rupees -	4,27,676 0 0	4,27,875 6 5

The difference is only Rs. 199–6–5 in favour of actuals, and no item seems to call for any special remark.

The following Table contrasts actual recoveries up to 31st March 1869 with the actual assessments, and the revised estimate shows remissions and brings out the balance outstanding on 31st March 1869 :—

	Revised Estimate for 1868.	Total Assessment for 1868 up to 31st March 1869.	Remitted from 1st January 1868 up to 31st March 1869 for 1868.	Collected from 1st January 1868 up to 31st March 1869 for 1868.	Outstanding 31st March 1869 for 1868.	Percentage of Outstanding on Assessment.
	RS.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS.
House rate - Recoverable half	9,28,460	9,39,458 0 5	29,371 15 8	8,63,777 3 0	46,308 13 9	5
Police rate - yearly in ad-	2,65,274	2,68,578 13 8	5,370 1 8	2,49,655 14 6	13,552 13 6	5
Lighting rate - vance.	1,98,956	2,01,358 5 5	4,088 10 4	1,87,185 0 8	10,084 10 5	5
Wheel tax recoverable quarterly in arrears - - -	2,60,000	2,50,573 1 4	1,489 12 0	2,38,148 1 6	10,935 3 10	4¼
Licence tax recoverable any time after 1st quarter -	4,00,000	*2,11,663 8 0	—	*2,11,663 8 0	—	—
Water rate recoverable quarterly in arrears - - - -	4,00,000	4,93,427 3 7	4,110 0 6	4,59,117 9 4	30,199 9 9	6
Halalcore cess recoverable half-yearly in advance - -	2,40,000	2,38,724 3 0	9,397 6 6	2,24,611 15 2	4,714 13 4	2
Total -	26,92,690	26,03,783 3 5	53,827 14 8	24,34,159 4 2	1,15,796 0 7	4½

Mr. Crawford thinks that it must be admitted that 4½ per cent. is a very small outstanding balance three months after the close of the year; about 35 per cent. of the gross outstandings being for rates recoverable quarterly in arrear.

Most of the outstandings it is believed will be recoverable, or will be made up, for by further assessments for 1868 during the current year.

The house rate, police rate, lighting rate, Halalcore cess, and partly the water rate, depend upon the rental valuation of properties.

The following table shows the rateable value in 1868, as compared with the returns for the last decade :—

Year.	No. of Properties assessed.	Rateable Value.
		Rs.
1858–9 - -	16,648	46,65,420
1859 - - -	16,741	50,21,400
1860 - - -	16,737	62,23,780
1861 - - -	16,902	63,49,055
1862 - - -	17,056	66,46,490
1863 - - -	17,188	71,59,755
1864 - - -	17,924	1,15,81,130
1865 - - -	17,959	1,20,14,655
1866 - - -	21,100	1,48,94,893
1867 - - -	22,829	1,63,09,535
1868 - - -	23,010	1,47,49,075

The above is the gross rateable value. 10 per cent. is to be deducted for repairs.

The wheel and house tax has fallen off from Rs. 255,610 in 1867 to Rs. 249,083 in 1868.

The following figures, continued from last year's report, show the yield of the water rates for each year from the commencement of the water supply up to December 1868 :—

Years.	Amount of Ordinary Assessment on House Valuation.	Amount of Meter Assessment.	Amount of Mill Assessment without Meter, prior to affixing of Meters.	Total yield.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1861 and prior	27,102 15 8	7,271 4 6	11,245 9 10	45,619 14 0
1862 - -	50,360 15 0	4,469 3 1	8,981 13 0	63,811 15 1
1863 - -	86,406 0 0	6,785 1 0	16,334 13 0	1,09,525 14 0
1864 - -	2,39,070 7 0	7,349 13 0	33,181 12 0	2,80,602 0 0
1865 - -	3,00,288 3 0	37,956 4 0	33,685 13 0	3,71,930 4 0
1866 - -	2,35,713 7 5	1,46,545 5 8	*36,558 8 0	4,18,817 5 1
1867 - -	2,27,007 3 11	1,71,752 7 11	Nil.	3,98,759 11 10
			Government Water Rate.	
1868 - -	2,34,031 12 10	1,02,715 0 5	1,56,680 6 4	4,59,117 9 4

* For broken periods, without Meter.

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Licence tax.

The great deficit was in this item; the estimated yield was 3¼ lakhs, the bench revised the estimate to 4 lakhs, and the actual yield was Rs. 212,965-8-0. There was no doubt that the Act was largely evaded, but this tax has been abolished, and a better form of taxation introduced.

Assessing and collecting department.

During the year certain irregularities came to light; proceedings were instituted against the parties chiefly concerned, but were abandoned from want of ground on which to sustain the charge. There was no actual loss. The Commissioner determined, with the approval of the finance committee, to separate the assessing and collecting departments, and issued a circular memorandum on the redistribution of the duties of assessing and collecting the rates and taxes, and reorganization of the department.

Mr. Crawford suggests the recovery of the occupiers rates through the agency of the house owners, allowing the latter a deduction of so much per cent. from the owners rate for the trouble of recovery. To make matters more simple he would consolidate the rates into one lump rate, so much per cent. to owners, so much per cent. to occupiers, and offer a per-centage deduction to anyone who chose to pay his rates for a year once for all in advance. Mr. Crawford hopes that these and his other suggestions on the subject may meet with early and earnest consideration.

Conclusion.

The Commissioner gives a short statistical comparison between Calcutta and Bombay, and considers that, remembering the high price of labour and material in Bombay as compared with Calcutta, and considering the great distances and straggling suburbs of Bombay as compared with the compact City of Calcutta, he can hardly be condemned for extravagance.

In the year 1868 there was an honest endeavour to economize in every direction, and especially to reduce the cost of conservancy and roads. Mr. Crawford feels encouragement from the consideration that in three years the masses have begun to learn that such scourges as cholera, fever, and the like can be prevented by the ordinary precautions of sanitation, by cleanliness in dwellings, by pure water, and ventilation. He says "few know, as we do, how much the poorer classes have been "persuaded to do for themselves, to improve their dwellings, and how much money "they have really spent in these improvements."

Statistical comparison between Calcutta and Bombay for 1868:—

	Calcutta.	Bombay.
Area in square miles	7·80	18·62
Population	430,000	816,562
Rateable value of properties	Rs. 1,07,50,000	Rs. 1,47,49,075
Income	„ 20,63,210	„ 30,31,658
Debts.		
Public loans at 6 per cent.	Rs. 47,00,000	Rs. 17,38,000
Miscellaneous debts	„ —	„ 17,00,000
Debt to Government at 4 per cent.	„ 52,00,000	„ 37,62,000
Total debts	Rs. 99,00,000	Rs. 72,00,000
	R. A. P.	R. A. P.
Rate per head per annum of municipal taxation	4 3 2	3 1 8
House rate	10 per cent.	7 per cent.
Police rate	3 per cent.	2 per cent.
Lighting rate	2 per cent.	1½ per cent
Yield of wheel, horse, and cart taxes	Rs. 1,44,214	Rs. 2,50,573
Cost of Health Department (1867) in labour and supervision	„ 1,36,997	„ 2,54,238
Number of carts used by Health Department	442	265
Number of coolies	1,850	1,732

Cost of road repairs - -	Rs. 3,01,809	Rs. 2,61,834
Cost of road watering - -	„ 1,00,270	„ 94,430, including Rolling.
Death rate per 1,000 of population -	31·9	19·20
Deaths from cholera - -	4,186	227

(Signed) ARTHUR CRAWFORD,
Municipal Commissioner for the City of Bombay.

Bombay, 9th April 1869.

ABSTRACT OF ANNUAL REPORT OF THE HEALTH OFFICER FOR 1868.

THE report bears date 18th February 1869, and is submitted by Dr. John Lumsdaine, Acting Health Officer during the absence of Dr. Hewlett, who had gone to England on medical certificate.

Registration of births and deaths.

The registration of births had been retrogressive; during 1868 there had been 3,534, and 552 still born, a total of 4,086 against 5,115 in 1867, and 5,904 in 1866.

The census of 1864 gives the total number of females as 286,112; and of these there were 37·35 per cent. between the ages of 14 and 44, the nubile or child-bearing period; that is to say, out of 286,112 women there were 164,078, rather more than one half, capable of bearing children, and but 4,086 births were recorded, a proportion of 1 to 40, the proportion of registered births to deaths being as 1 to 38·0; results which are somewhat disheartening.

Considering the proverbial carelessness of the natives, the deaths by violence were wonderfully low:—

By drowning - - -	93
Poisoning - - -	50
Hanging - - -	4
Hanging by law - -	2
Various other causes - -	150
	299

Among all races and castes the total of deaths for 1868 had been below the decennial mean.

	Asarcophagous.			Sarcophagous.											
	Boodhut and Jain.	Brahmun.	Lingaet and Bhatia.	Hindoos of other Caste.	Hindoo out-caste.	Moosulman.	Parsi.	Jew.	Native Christian.	Indo European.	European.	Negro African.	Chinese.	Other and unknown Races.	All Castes.
Dying in 1868 - -	603	464	254	7,637	1,030	3,713	943	62	507	49	271	137	10	22	15,702
Mean of ten years ending 31st December 1867 - -	742	487	335	8,849	1,192	4,197	870	65	548	41	908	165	9	53	17,861

	1868.			Mean of 10 years from Epidemic Causes.	Mean of 10 years from all Causes except Epidemic.	Mean of 10 years from all Causes.
	Epidemic Disease.	All Causes except Epidemic.	Total of all Causes.			
1st Quarter -	329	3,628	3,957	1,178	4,024	5,202
2d Quarter -	701	3,428	4,129	1,003	3,762	4,765
3d Quarter -	178	3,598	3,776	324	3,414	3,738
4th Quarter -	309	3,531	3,840	526	3,629	4,155
	1,517	14,185	15,702	3,031	14,829	17,860

Monthly Statistics of Diseases for Five Years.

—	1864.						1865.						1866.						1867.						1868.					
	Cholera.	Small-pox.	Measles.	Fever.	All other Causes except Zymotic.	Total, exclusive of Still-born.	Cholera.	Small-pox.	Measles.	Fever.	All other Causes except Zymotic.	Total, exclusive of Still-born.	Cholera.	Small-pox.	Measles.	Fever.	All other Causes except Zymotic.	Total, exclusive of Still-born.	Cholera.	Small-pox.	Measles.	Fever.	All other Causes except Zymotic.	Total, exclusive of Still-born.	Cholera.	Small-pox.	Measles.	Fever.	All other Causes except Zymotic.	Total, exclusive of Still-born.
January -	622	65	5	1,140	514	2,346	363	36	16	1,582	540	2,537	13	35	49	1,058	353	1,508	11	14	3	503	944	1,475	1	42	2	584	799	1,428
February -	401	158	22	899	514	1,993	540	59	25	1,861	505	2,990	15	98	89	984	360	1,546	21	66	1	534	736	1,358	—	95	12	481	639	1,227
March -	302	367	31	1,022	510	2,232	520	136	54	2,410	500	3,620	12	257	141	1,114	358	1,882	12	247	3	470	745	1,477	—	166	11	482	643	1,302
April -	680	438	27	1,140	526	2,811	352	173	74	2,588	541	3,728	16	271	117	1,088	398	1,887	26	212	3	548	685	1,474	3	218	17	396	698	1,332
May -	837	302	13	1,204	476	2,832	627	68	83	2,462	561	3,801	21	209	52	1,035	418	1,735	5	190	4	602	647	1,484	3	225	26	455	743	1,452
June -	395	185	15	1,034	459	2,088	206	33	40	1,381	476	2,136	15	112	20	761	389	1,297	9	151	3	470	632	1,265	2	191	16	414	722	1,345
July -	371	85	4	930	464	1,854	116	10	28	1,235	709	2,098	27	54	6	562	538	1,187	5	81	2	396	685	1,169	4	76	14	434	909	1,437
August -	351	43	2	1,050	505	1,951	62	9	12	1,154	561	1,798	43	23	4	574	556	1,200	5	40	1	318	830	1,194	6	36	7	355	767	1,171
September	232	20	1	930	455	1,698	30	7	8	1,137	524	1,706	63	9	1	544	467	1,084	7	16	1	374	702	1,100	1	20	14	407	726	1,168
October -	88	10	3	1,002	399	1,502	32	5	7	1,009	426	1,479	49	2	1	617	417	1,086	6	10	—	428	670	1,114	43	8	11	524	642	1,228
November	137	13	1	1,015	421	1,587	22	9	10	943	371	1,355	31	1	1	697	418	1,148	4	11	2	467	698	1,182	63	19	15	482	667	1,246
December	431	21	8	1,168	493	2,121	13	22	12	977	359	1,383	27	8	1	843	426	1,305	—	17	1	564	662	1,244	101	27	22	467	749	1,366
Years -	4,847	1,707	132	12,593	5,736	25,015	2,883	567	369	18,739	6,073	28,631	332	1,079	482	9,877	5,095	16,865	111	1,055	24	5,674	8,636	15,500	227	1,123	167	5,481	8,704	15,702

Comparison of Principal Diseases for Five Years.

—	1864.	1865.	1865.	1867.	1868.
	Rate per 1,000.	Rate per 1,000.	Rate per 1,000.	Rate per 1,000,	Rate per 1,000.
Cholera - - - - - - -	5·93	3·53	·40	·13	·27
Small-pox - - - - - - -	2·09	0·69	1·32	1·29	1·37
Measles - - - - - - - -	0·16	0·45	·52	·02	·20
Fever - - - - - - - -	15·42	22·94	12·09	6·94	6·71
All other Causes - - - - - -	7·02	7·43	6·25	10·57	10·65
Total of all Causes - -	30·62	35·04	20·65	18·95	19·20
Population estimated at 816,562, one death to every -	32 persons living	28	48	52	52

The death-rate for the year from all causes, though somewhat above that for 1867, is much below the decennial mean, but the table is still a reproach, for it shows 1,123 deaths from small-pox—a preventible disease.

Of the total number of deaths about one-third are returned as from *fever*, but it is the "tap" of the police sepoy, and there is no further clue to it. The number of respiratory affections that end fatally speak unmistakeably of impure air and over-crowding, and more than half of the nervous disorders are in tiny infants of from 1 to 15 days old. But the saddest of all is the fact that nearly half of the deaths occur in those years when life is strongest. They sink and die from sheer want, not want of food, but from the absence of that very little that at these times nature asks for to help her in her efforts to restore.

During 1867 there was not much cholera; 111 persons died from it, and in November it had disappeared. In 1868 there were 227 deaths, and of these 207 occurred in the last quarter; 43 in October, 63 in November, and 101 in December. Medicines were distributed, and, as a rule, received (though in some cases flatly refused,) and the notices posted up on the first appearance of cholera were considered to have worked well. There was a marked unwillingness among the natives to avail themselves of the hospital. The only funds at the Health Officer's disposal were Rs. 1,000, and the only assistance he could obtain were two hospital assistants, who could barely write their names, and were more obstructive than useful. Dr. Lumsdaine anxiously inquires, were cholera to become more than sporadic, what means would be at his disposal to check its ravages? "Literally none." The Jamsetjee Jeejeebhoy Hospital is already over-crowded, and there are no temporary stations to which sufferers might be brought for treatment. The danger is ever present, and it is cumulative, but the remedy is never thought of,—*pure water and complete drainage*. Of the latter there is none, and of the former the supply is far too scanty. There are wells where it is ascertained by analysis that the water is a positive source of disease. These wells are largely used, and it was from one of them that a cholera-stricken locality drew its supply. From this well hundreds drew unrestrainedly, nor was there any power to prevent them. Within a few feet of it there was a Vehar main, and though the owner was begged to get a hydrant fixed there, he refused, because he said he would have to pay for it. He, knowing that the water was impure, was quite contented that his tenants, knowing nothing about it, should be dependent upon it.

Meteorological.

The meteorological returns from the Colaba Observatory are full of interest. It was Dr. Hewlett's hope that another and independent set of observations might be taken, and with this view some very valuable instruments have been obtained. Their being set up is now delayed for want of funds, but, when taken into use, the results cannot but be satisfactory, for the field of local observation will then be extended. The barometric and thermometric wave lines have shown a tropical uniformity. At Colaba the monsoon rainfall was 63·60 inches during 104 days. At Byculla it was 78·35 during 96 days. On the 9th of August 14·21 inches of rain fell in 24 hours, and a great part of the town was literally flooded, the water in some places being three feet deep.

BOMBAY.

Abstract of the Meteorological Observations supplied by the Bombay Observatory during the year beginning 1st January 1868.

	Pressure of Air. (Barometer 37½ Feet above the Mean Sea Level and reduced to 32° Fahr.) Inches.			Temperature of Air in the Shade. Degrees Fahr.			Hygrometric State of Air. Dew Point. Degrees Fahr.			Hygrometric State of Air. Humidity.		Wind. Daily Mean Number of Hours.		Rain at Colaba.		Rain at Byculla.	
	Mean.	Mean Daily Range.	Absolute Range.	Mean.	Mean Daily Range.	Absolute Range.	Mean.	Mean Daily Range.	Absolute Range.	Mean.	Range of Daily Mean.	From Sea.	From Land.	Inches.	On No. of Days.	Inches.	On No. of Days.
1868.																	
January	29·937	·129	·283	72·9	13·0	23·7	62·9	11·2	27·4	·72	·29	19	5	—	—	—	—
February	·921	·134	·328	74·8	12·8	27·4	66·8	8·3	24·5	·77	·18	18½	5⅝	—	—	—	—
March	·881	·120	·245	76·6	11·0	22·0	67·0	7·9	51·6	·74	·39	20¼	3¾	0·01	1	—	—
Quarter 1st	·913	·128	·328	74·8	12·3	29·1	65·6	9·1	53·3	·74	·29	19	5	0·01	1	—	—
April	·831	·129	·348	81·6	9·9	16·6	73·0	5·1	17·7	·76	·20	21	3	—	—	—	—
May	·796	·115	·352	84·5	9·1	14·1	76·2	3·3	8·8	·77	·10	22	2	—	—	—	—
June	·673	·104	·487	83·2	7·3	15·9	77·8	4·6	9·7	·84	·16	19½	4½	13·88	29	21·30	27
Quarter 2nd	·764	·116	·709	83·1	8·8	19·5	75·7	4·3	21·3	·79	·15	21	3	13·88	29	21·30	27
July	·699	·088	·797	80·2	6·4	16·3	76·2	4·0	8·2	·88	·16	22½	1½	20·98	28	26·65	26
August	·742	·091	·359	79·6	5·9	10·3	75·4	3·4	7·3	·87	·14	23⅝	¼	20·83	26	23·95	26
September	·817	·104	·227	80·0	7·8	12·4	75·0	3·8	7·9	·85	·11	22	2	7·91	21	6·45	17
Quarter 3rd	·753	·095	·857	79·9	6·7	16·3	75·5	3·7	8·5	·87	·14	23	1	49·72	75	57·05	69
October	·857	·121	·225	81·3	10·9	16·8	74·9	6·5	17·5	·82	·19	16	8	0·14	7	—	—
November	·920	·118	·350	78·8	13·8	19·6	67·9	10·6	25·6	·71	·20	13	11	0·02	1	—	—
December	·963	·128	·302	75·7	13·4	22·3	65·1	10·0	22·4	·71	·19	14½	9½	—	—	—	—
Quarter 4th	·913	·122	·391	78·6	12·7	24·1	69·3	9·0	29·7	·75	·19	14½	9½	0·16	2	—	—
Year	29·836	·115	·060	79·1	10·1	30·3	71·5	6·5	57·4	·79	·19	19½	4½	63·77	107	78·35	96

Scavengering duties.

In November 1865 Dr. Hewlett assumed charge of the executive duties.

128 scavengering carts	against, at close of 1868,	200
53 drain carts	,, ,,	133
109 nightsoil carts	,, ,,	136
197 pairs of bullocks	,, ,,	419½

Also there is an additional open sweepings siding for 22 wagons against one, a cul de sac for 7 wagons.

It appears from Dr. Lumsdaine's tables that—

Under the contract system in 1865	7,550 wagons,	or 45,300 tons
Under the departmental system in 1866	17,183 do.	or 103,098 do.
Do. do. in 1867,	16,254 do.	or 111,789 do.
Do. do. in 1868,	15,991 do.	or 111,876 do.

} of refuse went to Coorla.

Besides this, in 1868 no less than 13,431 cartloads of refuse were burnt at different points, equal to 840 wagon loads or 6,720 tons; so that the entire amount of refuse removed in 1868 was 16,831 wagon loads, or 118,596 tons. It appears also that, whereas in 1867 it cost Rs. 157,949 to dispose of 111,789 tons of refuse, in 1868 it cost only Rs. 138,000 to dispose of 118,596 tons. This satisfactory result is accounted for by—

1. The use of larger railway wagons:
2. Reduction in railway charge for haulage:
3. Reduction in the contractors charge for removal from the train at Coorla:
4. By the experiments in burning, by which 13,431 cartloads, which would have cost Rs. 7,500 to remove by rail, were disposed of without any expenditure whatever.

Speaking roundly, every ton of refuse burnt would save the town one rupee, and if all the refuse of the town can be burnt, a saving equal to one per cent. house-rate would be effected. Dr. Lumsdaine believes that with proper furnaces and sheds, almost the whole amount of refuse might be disposed of by burning. The experiments had hitherto proved a failure from want apparently of a proper furnace, but the Health Officer hoped shortly to submit a scheme, and though the first cost might be considerable, he considered that the charges for maintenance need not be high, and that the product of the burning might be utilized. The first outlay might also be met by the sale of rolling stock in wagons. The experiment has been successfully tried at Madras and Kurrachee.

Drain cleaning.

The total length attended to in 1867 was 102·86 miles; in 1868, 110·36 miles had been opened out and cleaned.

Summonses, &c.

2,687 notices were served on private persons to remedy sanitary defects in their properties. In 1,218 cases the notices were complied with.

The following table shows the result of summonses in the police court taken out by the health department against persons charged with offences against sanitation in 1867 and 1868:—

Year.	No. of Summonses.	Deduct withdrawn, offence having ceased.	Balance.	Of which Convictions.	Dismissed.
1867	1,455	332	1,123	1,068	55
1868	1,420	576	844	821	23

The fines in 1866 yielded Rs. 6,126-13-0, in 1867 Rs. 8,890-0-0, and in 1868 Rs. 8,032-5-0.

The severity of the measures last year taken against the owners of milch cattle has had some good effect. There were 96 cases of keeping cattle so as to be a nuisance to the neighbourhood, and of these there were 82 convictions.

But no real improvement can take place until public milch cattle-stables are established.

Halalcore establishment.

The Halalcore brigade had been steadily drilled and reduced to discipline, and considerable improvement was admitted on all hands. The pay of the men has been gradually reduced from Rs. 40 to 20 per mensem, the pay of the women and boys being reduced in proportion. Every month shows a decrease in complaints of bad service; this improvement is considered due to the firm and judicious treatment by the Health Department of a body of the most troublesome and disorderly men in Hindostan, and it is no slight victory to have broken up so powerful a monopoly, and reduced the mass so soon to order and discipline.

India Office,
1870.

CHARLES C. PLOWDEN,
Sanitary Department.

APPENDIX.

No. 1.

Report of Emigration Commissioners on Dr. Bakewell's Report on Causes of Sickness and Mortality in Coolie Emigrant Ships.

Sir, Emigration Board, 16th July 1869.

I have to acknowledge your letter of the 7th instant, enclosing the report of Dr. Bakewell, the Health Officer of Shipping in Trinidad, on the causes of sickness and mortality in Cooly emigrant ships.

2. Dr. Bakewell divides his report into two parts. The first part relates principally to the influence of temperature and weather on the health of immigrants, and the conclusion to which he comes is, that sickness increases with an increase of temperature, and *vice versâ*, and that north-east or south-east winds, heavy rain, or heavy gales are also causes of sickness. He shows that there is little difference in the mortality of the ships, but that, as might be expected, the mortality is in an inverse ratio to age. The facts from which Dr. Bakewell's argument on these points is drawn are taken to a great extent from the experience of two ships only, the "Arvina" and "Sevilla," a too narrow basis from which to generalize, though I am aware of no reason to doubt that a more extended experience would lead to much the same conclusions. It appears to me, however, that the results to be deduced from this portion of the report are not of any great practical use.

3. The second part is more important. Having contrasted in the first part the great excess of mortality in Cooly emigration to the West Indies over that in emigration from the United Kingdom to Australia, he proceeds to consider the reasons for this difference. First. As regards the individuals, he says, that the English emigrant belongs to a class which for centuries has been living on a much better diet than the Hindoo; that he habitually eats wheaten bread, and drinks beer, and that even if he cannot afford meat, he is able to eat cheese, which is the most concentrated form of nutriment that can be taken. He is therefore, as a general rule, strong and healthy.

4. The Indian, on the other hand, he describes as hereditarily scorbutic, ill nourished, and subject to a rapid sinking of the vital powers, so fed as to be in a state of "normal diarrhœa," and many of them debilitated by living in the miasmatic poisons of the Plain of Hindostan. The accidents, moreover, of a sea voyage are all against him; the motion of the ship exhausts him physically, and the feeling that he is violating his caste and leaving his home for a strange land depresses him morally. Thus, both physical and moral causes tend to lower the vital powers and to derange the digestive and nervous systems.

5. Next, in regard to the dietary on board ship. Dr. Bakewell says, that provided in our Australian ships is "almost perfect;" that it is difficult to conceive a dietary which, at a reasonable cost, could supply more completely what physiology teaches to be wanted; and that the result shows its success. The dietary of the Cooly, on the other hand, is, he says, deficient in nutritive value; the rice of which it is largely composed is not suited to up-country Coolies; it is wanting in the nitrogen required to repair the waste of the tissues, and hence the lungs and intestinal canal become weakened and diseased. Looking to the other depressing circumstances connected with emigration, he suggests that the Cooly on board ship ought to receive a more nutritious dietary than he has been accustomed to in his own country.

6. Another difference between the English and the Indian emigrant is, he remarks, the space allowed to each on board ship. The English emigrant is allowed 15, the Indian only 12 superficial feet of deck; the consequence is, that in order to keep the air in the Indian ships fit to breathe a "tremendous" draft of air must be kept constantly in action through the between decks, causing checks of perspiration and the diseases resulting from it. The choice, therefore, lies between such an amount of ventilation as will produce disease, or such impurity of the air as will have the same effect in another way.

7. The remedies which Dr. Bakewell proposes are (1) an improvement in the quality of the food issued to Indian emigrants; (2) an increase of space; and (3) the placing the transport in the hands of a single firm during good behaviour. Admitting that these alterations would in the first instance increase the expense, he considers that the increase would be more than made up by a diminution of mortality on the voyage, and the better condition of the emigrants when they arrive.

8. It cannot be denied that the mortality of Indian emigrants on the voyage, even under the most favourable circumstances, very far exceeds the mortality in the voyage from the United Kingdom to Australia. But Dr. Bakewell has, I think, pointed out the principal cause of this in the contrast which he draws between the constitution and habits of the English labourer and the Indian Cooly. Assuming the description he gives of the latter, it is rather a matter of surprise that the mortality is not greater, than that it is so great. I am not aware whether there are any statistics which would show the rate of mortality among the Cooly class in India, but if there are, I have no doubt they would show a much higher normal rate than among the agricultural labourers or country mechanics in Great Britain.

9. Nevertheless, there is much in what Dr. Bakewell urges in respect to the innutritious dietary of Cooly ships, which appears to deserve attentive consideration. The Indian law places in the hands of the Governor General in Council the duty of prescribing the description, quality, and quantity of food to be issued on the voyage; and we should not be justified in interfering in a matter which so largely depends on the habits, religion, and prejudices of the people, further than by submitting for consideration such suggestions as the experience of our surgeons leads them to make. Several of the most experienced of those surgeons have lately recommended, as Dr. Bakewell does, the issue of a considerable ration of meat to the emigrants, and have stated that they liked it, and grew strong upon it; and these reports we have communicated to the authorities in India. How far the meat ration could be increased by the substitution of preserved meat for the live sheep now carried, is a question for those authorities. Dr. Bakewell suggests, that to prevent religious scruples, mutton only should be used, and be preserved with a portion of its bone to show its origin. I apprehend, however, that no meat is at present so preserved, and it is not likely to be so preserved only for this particular service. But from the reports of our surgeons, we believe that Coolies who have broken their caste by emigrating are not likely to be scrupulous about eating meat.

10. In respect to an increase of space, I may observe, that while there is no question that it would add considerably to the expense of the emigration, the best authorities in India, who have inquired into the causes of sickness on the voyage, have been opinion that it was not caused by overcrowding. It was found, moreover, that ships which before the connexion with the French carried Coolies from Pondicherry in a larger ratio to space than they are now carried from Calcutta, had comparatively no sickness, which leads to the inference that, where the emigrant is in good health at the time of embarkation, the space now allotted to him is sufficient. It is, of course, undeniable that increased space is in itself an advantage, that where sickness breaks out, smaller numbers and more room are of great value. The real question, however, is whether the circumstances are such as to require an alteration, which would certainly add from 10 to 15 per cent. to the expense of emigration. It can scarcely be considered that they are so at present, and I am not, therefore, prepared to recommend that the space allotted to the Cooly, which has recently been enlarged from the 10 superficial feet required by the law to the 12 superficial feet which he formerly received, should be any further increased.

11. Nor am I prepared to assent to Dr. Bakewell's suggestion, that a monopoly of the service should be given to a single firm, conditional on their performing it satisfactorily. It is no doubt true that the owners and masters of ships who have the experience of the service, especially those who are connected with the Colony to which the emigrants are taken, are likely to perform the service better than those who take it up as a single venture, and I am gratified at being able to state that, as far as Trinidad is concerned, this seems likely to be the case. Thus, on the 12th instant, in taking up ships for next season, at the request of the Colonial Government, we were able, from the nature of the tenders made to us, to charter four from a single firm largely connected with the Colony. But to give an absolute monopoly to a single firm, liable to be cancelled only by misconduct, which would be exceedingly difficult of proof, would be more likely to lead to carelessness and expense than to increased efficiency, and would be sure to produce dissatisfaction and complaint.

12. On the whole, I would recommend that a copy of the second and third parts of Dr. Bakewell's report should be sent to India for the consideration of the Local Government. The first part, with its elaborate diagrams, though interesting, is not of sufficient practical value to justify the trouble of copying it. The second part suggests the points which it is within the competency of the Government to deal with, while the third part states the conclusions at which Dr. Bakewell has arrived.

I have, &c.
(Signed) T. W. C. MURDOCH.

Sir F. Rogers, Bart.

EXTRACTS from Report of Dr. Bakewell, the Health Officer of Shipping on the Causes of the Sickness and Mortality in Cooly Ships. June 1869.

PART II.

Such are the principal conclusions which have been reached by the use of the numerical method of investigation. No attempt has been made to reason about the facts or premises there set forth; the writer has rigidly restricted himself to a bare enumeration of facts and figures. It would be folly, however, not to read these facts by the light of our experience, and of that knowledge which, though not reducible to mathematical terms, every one must, and invariably does act on in the practical business of life.

We have to examine why it is, that during the same period of eight years, more than 11 times as many immigrants died on board Calcutta ships coming to Trinadad than on board English ships going to Victoria.*

During those years 761 Calcutta immigrants died on board the Trinidad ships. If the mortality had been no larger than it was on board the Victoria ships, only 64 would have died.

Each Cooly is estimated to cost the Colony about 22*l.*; as the prosperity of the Colony is entirely due to immigration, the Cooly must be worth more than he costs; however, say he is only worth 22*l.*, then 694, the number whose lives would have been saved, had the mortality not exceeded that of the Victorian immigrants, multiplied by 22 equals 15,268*l.*, a sum which is certainly worth saving, putting all considerations of humanity out of the question.

Now, besides the difference in the diet and cubical space given to the Australian and Trinida-

* The writer only selected Victoria incidentally. He has not calculated the mortality of the other Australian colonies.

emigrants, which might serve to account for the difference in their death rate, there are other points of divergence, some moral and some physical, which have to be taken into consideration.

The English emigrant belongs to the working classes, including agricultural labourers, handicraftsmen, &c., not, as a rule, to the most prosperous of his class, for a fully employed working man rarely emigrates, but, at any rate, to a class who for centuries have been living on a much better diet than the Hindoo. The English working man, except agricultural labourers, habitually eats wheaten bread, and flesh meat, and drinks beer. The agricultural labourer in many parts of the kingdom eats butcher's meat perhaps only once a week, and then in the shape of salt pork or bacon, but he always eats wheaten bread, and generally indulges in some beer of a weaker quality than the mechanic. But if he does not take his nitrogen in the form of flesh meat, his out-door occupations in the pure and bracing country air enable him to digest cheese, which, *when* it can can be digested, is the most concentrated form of nutriment that can be taken.

Nevertheless, it must be admitted that both the agricultural labourer and the mechanic are often ill-nourished, the former because his food is too poor in nutritive ingredients to enable him to support the muscular waste his work requires, the latter because his higher wages tempt him to indulge too much in beer, spirits, and tobacco.

But for both these classes the diet required by the Emigration Commissioners is almost perfect. It is hard to conceive a dietary scale which, at any reasonable cost, could supply the emigrant more completely with what physiology teaches us he wants, and it is certain that practically results show how admirably it answers.

The Indian immigrant is, to use Dr. Pearse's terse description, "a deeply scorbutic, low-fed "Cooly, with a fatty degeneration of cornea, proneness to low diarrhœa, puffy gums, flabby flesh, "and rapid sinking of the vital powers at times." He is, moreover, not an individual who has grafted this state on an originally sound and healthy constitution; he has inherited it, he was born with it, his ancestors for thousands of years have been in the same condition. They have been for the most part vegetable feeders, using a very small portion of animal food. They have consequently been obliged to swallow a much larger bulk of food than the flesh-eating tribes of mankind, in order to draw from it that amount of albuminous and other nitrogenous ingredients which are absolutely necessary to supply the waste of tissue, and to maintain life. Hence his stomach is an enormous pouch with thin walls, and his intestinal canal is in a state of what may be called normal diarrhœa. The immigrants coming from Calcutta have, for the most part, been living on the vast plain of Hindostan amid miasmatic poisons, which are of themselves extremely debilitating, and which must, in the course of ages, have greatly deteriorated the race.

Of late years famine has visited his country, and probably the fear of starvation has been the chief motive which has induced the habit-bound and home-loving Hindoo to defy all the sanctions of his religion, to break through all the customs of his caste, and to embark for the unknown land across "the great water."

He has marched, perhaps, hundreds of miles to the depôt at Calcutta. He rests there a few days, and then undergoes an examination before at least two medical men before embarkation. It may be fairly presumed that he is not below the average of his countrymen.

But from the day he comes on board he enters upon a totally new and strange life. The motion of the ship makes him sea-sick, and although sea-sickness may be a very good thing for a person who habitually indulges too much his appetite for food and fermented liquor, it is a very depressing agent to those who are already weak. The motion of the vessel and the narrowness of the space, the necessity of going up and down the hatchways, &c., cause a great deal of fatigue, as every one must have felt at the beginning of a voyage. It is not that he undergoes more muscular exertion than on land, but that muscles but little used on shore are largely used to maintain one's balance, &c., and are easily fatigued, hence one soon feels tired during the first few days of a voyage. A very convincing proof that new muscles come into action is seen in the rolling gait which one cannot get rid of for a few days after landing from a long voyage. Moreover, the nights are broken, and when sleep does come the rest is not so complete, on account of the motion of the ship, as on shore.

Such are some of the physical causes at work of an exhausting or debilitating kind.

But the moral causes are even more important. We have here to deal with persons who have for the first time in their lives violated openly the precepts of their religion and defied the anger of their gods. They have broken their caste; they have lowered themselves below the level of the lowest Paria; the doctrines and the customs of the oldest religion in the world, which have been handed down from father to son for thousands of years, they see daily disobeyed or broken. They are compelled to eat their food contaminated, as they believe, by the presence of the European and of other Natives of lower caste than themselves. No wonder if such food so eaten is often loathsome to them, and that nothing but the pangs of hunger induce them to take it. They are leaving their homes and their country, and voyaging towards a land of which they know little, except that they will be among people different from them in race, religion, and habits.

It must be remembered that we have not to deal with a race like the Negroes, who, provided their physical wants are supplied, are indifferent to everything else, and whose mental powers, especially those of memory and reflection, are almost entirely absent. We have to deal with a race whose ancestors were civilized when ours were naked savages, eating acorns and painting themselves blue. We have to deal with men whose ancestors possessed elaborate systems of religion and philosophy at a time when we knew nothing of our own, who then spoke the language which has proved the mother tongue of all the Caucasian languages, as from their race spring all the great Indo-Caucasian nations.

We must, therefore, take into account the action of moral as well as physical causes. We must admit that all these are depressing agencies; they all tend to lower the vital powers; dejection of mind invariably causes a greater or less derangement of the bodily functions, particularly of those of the digestive and nervous systems.

Placed on board in the state of body and mind here stated, what is done for them?

Common sense would say, that they ought to receive a diet decidedly above the average of what they have been accustomed to, and that special measures should be taken to overcome the mental dejection and the other moral agencies tending to lower the system. But this is not done, although there can be no question that their diet, as provided by the regulations, is in some respects very well suited to them. There is no doubt of its being abundantly sufficient in quantity. The condition in which they land here shows that they have had an ample supply of digestive food. But food may be ample in quantity and easy of digestion, and yet be deficient in some of those ingredients which are required for keeping an individual in healthy life. This is where the Cooly's diet fails. I do not attach much importance to the fact that it is considerably less in quantity than that of the European emigrant, because considering the way in which rice swells and gains weight by cooking, I should think the weight and the bulk of the two diets when cooked would be nearly equal.

The immense difference lies in the nutritive value of the materials. Look, for example, at the farinaceous ingredients and compare the Cooly's 8 lbs. 12 ozs. of rice with the 7 lbs. 2 ozs. of biscuit, wheaten flour, and oatmeal, to say nothing of the 8 oz. of rice.

The 14 ozs. of salt fish per week given to the Cooly is an amazing contrast to the 40 ozs. of prime salt beef and pork, besides the 16 ozs. of preserved meat and the 6 ozs. of suet. The carrots and potatoes find no equivalent in the Cooly dietary, and the onions are only 14 ozs. against 2 lbs. in the European dietary.

It is a great mistake to suppose that all the inhabitants of British India live on rice and ghee. I know the idea is a favourite one in Trinidad, where it is considered that the additional modicum of salt fish is an unheard of luxury to the Cooly. Dr. Pearse, in his often quoted little book, says (page 58): "Coolies often loathe the continuous rice, chaupatties (*i.e.*, cakes made with flour "and a little salt, something like the oat-cake of Yorkshire and Scotland;) are the favourite food "of nearly all Coolies. A Devonshire boy does not so much enjoy plum pudding as a Cooly his "chaupatty."

Dr. Rakeem, himself a native of India, told me in conversation, that the up-country Coolies detest rice, and that he always issued flour to them for chaupatties. It is evident that the substitution of wheaten flour for rice would make a most important difference to the nutrition of the immigants.

There are two great classes of food, those which tend to form the organs of the body in growing animals, or to supply the waste of the tissue in adult ones, and those which serve to maintain the respiratory process and to keep up the heat of the body. The former class comprises the foods into whose composition nitrogen enters; the latter consists mainly of fatty bodies (such as the ghee of the Cooly, the butter and suet of the European) and the sugars, starches, and alcoholic drinks.

Now the rice of the Coolie diet consists to a very great extent of starch or other non-nitrogenized substances, the proportion of what Liebig calls "plastic azotized (*i.e.*, nitrogenized) matter" (equivalent to so much vegetable albumen, fibrine, and caseine) he states as only seven per cent. of the whole, while wheat contains more than twenty-one per cent, and oatmeal about 20 per cent.

The nitrogenized ingredients alone go to form tissue, the starch, sugar, and othor non-azotized compounds are either burnt off in the respiratory organs or go to form fat. Hence it is, that while we find among these Coolies the vital organs, such as the lungs and intestinal canal, showing such evident signs of weakness, and so liable from the slightest cause to become diseased, yet these Coolies are plump and fat. If, adopting Liebig's analysis,* we look only to the tissue-forming material, the wheaten flour, biscuit, and oatmeal of the European diet scale are equal to 21 pounds of rice.

It will, of course, be objected that the Cooly receives quite as good food as he has been accustomed to, and that he lives in good health on what an Englishman would starve on.

I doubt very much whether he does receive as good food as he has been accustomed to. I have been informed that even the Hindoos make much use of fish. They certainly eat it most heartily when they come here. I have before said that many tribes do not eat rice, but flour; I suppose they drink milk, and do not object to eggs.

As for the Mahometans, of whom large numbers emigrate to this island, they certainly eat meat and other forms of animal food, and cannot fail to suffer from a continuous rice diet.

But even admitting, for the sake of argument, that their food is as nutritious as it was on shore, I deny altogether that what might be sufficient when living on land and following their usual occupations, and not changing their ordinary habits, will suffice in the totally new condition under which they find themselves placed on shipboard.

Some of the depressing and debilitating agencies to which they are subject have been already enumerated. Reasoning *à priori* we should say that a more nutritious dietary is required in order to counteract them, and that if such a dietary be not given the inevitable result will be a great amount of sickness and mortality.

We should say, that looking at what the Hindoo is, his feeble frame, his deficient muscular development, his slow and cautious movements, the diseases to which he is liable, and the conditions under which for thousands of years he has lived, nothing could be more contrary to common sense, physiology, and experience, than to suppose such a man could be suddenly placed in entirely new physical conditions, subjected to depressing and agitating mental emotions, and to considerable bodily fatigue of an entirely new kind, and be maintained in health and strength on his ordinary dietary. Another proof, if another were needed, that the cause of mortality is debility, is to be found in the fact proved by the experience of eight years, that the death rate invariably increases inversely as the age, that is to say, the infants die in greater proportion than the children, and the children than the adults, and that of the two sexes the females suffer most.

This is exactly what we should expect from the premises. Now, if death were owing

* I am quite aware that Liebig's views have been opposed by recent inquirers, but not in such a way as to affect my argument.

mainly to exposure to cold, we should find that more men would die than women, and more adults than infants, the latter being certainly more protected from the cold than their parents.

If reasoning *à priori* we should come to this conclusion, reasoning *à posteriori* we arrive at it oo. It is not only the result which we might naturally expect, it is what we find has actually occurred. The proof of this assertion is to be found in the first part. .

But not only is the food of the Cooly at fault, but another, and I believe fertile source of disease, in the very limited superficial and cubical space allotted to him.

The European immigrant must have 15 superficial feet of the upper passenger deck, if the height between decks is less than 7 feet, then 18 superficial feet must be allowed; this would give at least 105 cubic feet to each individual, not too much when it is considered that in the soldiers' barracks in India 90 superficial and about 1,200 cubic feet are allowed, and in the hospitals 120 superficial feet. Yet this not very liberal allowance was cut down by one third for the Indian immigrant during the whole period over which our chief calculations extend, and was only increased to 12 feet last year.

What was the reason of this preposterous regulation it is impossible to guess. Was it supposed that the Cooly did not make as many respirations in an hour as the European, or that a Cooly could live with less oxygen than a European under similar circumstances?

It must be evident that, packed away in this manner, the immigrant can only be saved from suffocation by a tremendous draught of air through the between decks. Dr. Pearse speaks of the injurious effects of this on the people, and of its causing diarrhœa, dysentery, and thoracic disease, in several parts of his book.

There can be no reasonable doubt that this is one of the causes which makes the hotter temperature in the between decks more injurious to health than the lower ones. Of course if the people were in a sound state of health, and receiving sufficient nutritious food, they would be better able to resist the evil effects of this rude kind of ventilation.

It may seem strange to those not acquainted with tropical climates that any injurious effects can be attributed to draughts of air having a temperature between 70° and 90°. In Europe such air would be called warm. But it must be remembered that those who are habitually exposed to a temperature of 85° to 95° in the shade find a draught of air 76° or 78° very chilling. Even when hotter than this, if the air is below the temperature of the blood (99° to 100°), and passing rapidly over the uncovered skin, it will cause a sensation of cold, and will check the perspiration. A very ample proof of this is to be found in the act of fanning, which in the hottest room causes a sensation of coolness.

It is clear, therefore, that by allowing such a small space to the Cooly we are reduced to one of two alternatives—either to give him fresh air, by such an amount of ventilation (in the etymological sense of that word) as will be very likely to produce disease, or we must allow him to breathe impure air, and thus certainly produce other and perhaps more formidable diseases.

Part III.

It will be seen that I attribute the sickness and mortality among the immigrants to two chief causes:—

1st. Their food not being sufficiently rich in nutritive ingredients.

2d. To the want of sufficient deck span. It may be also that sometimes bad water is put on board at Calcutta, as I am informed that it is much less expensive to pump water up from the river than to supply it in other ways. I have been told that 1*s.* a head for each man has been paid to Captains to induce them to allow this to be done. This cause of disease, when it exists, is so obvious and so certain to be detected by a careful Surgeon, that I should not imagine it to be very common.

The remedies I would propose are two,—to improve the quality of the food, and to give the same superficial space as in European emigrant ships.

There are certain practical difficulties in the way of improving the nutritive quality of the food, which must be considered.

The Hindoo will eat no meat except mutton, and I believe some few will not eat that. But the great bulk will undoubtedly eat mutton, and more sheep might, Dr. Pearse says, be readily accommodated.

Preserved mutton, which must, however, contain some of the bones in order to show its origin, might be supplied. This the Coolies greatly relish. Those I had charge of, who were landed from the "Ellenborough" and "Liverpool," very speedily devoured all the preserved mutton left from the ships' stores. To a large extent, wheaten flour should be substituted for rice.

Condensed or desicated milk might be served out once a week.

The quantity of salt fish ought to be largely increased, and, instead of the stuff which is at present given, the very best Newfoundland cod fish should be the staple. A small quantity of herrings or salt mackerel might be sent as a variety. On these points, however, the Surgeons Superintendent will be able to afford valuable hints.

I should not have presumed to give any advice on the subject, had I not found by experience that the Coolies not only like fish, but improve on it very rapidly when it is fresh. Would it not be possible to preserve the cheaper kinds of fish, such as mackerel and herrings, in the same way that meat is preserved without salt? Surely, if a sufficient market was opened for it, some means of utilizing the immense quantity of mackerel and herring, which are now often wasted, might be found.

I think that probably small quantities of Liebig's essence of beef, made in South America and Australia, might be introduced into the soup disguised as chutnee. A very small quantity of this essence would add greatly to the nutritive qualities of the soup.

Of very great importance, I think, is issuing to the emigrants some form of special stimulants. Dr. Rakeem, I perceive by his journal, and Dr. Pearse, give gunjah and opium to those habituated to them. Dr. Rakeem, I see, issued rations of brandy-and-water pretty frequently, besides encouraging tom-toms and other excruciating musical instruments. I would suggest that rum of good quality would answer every purpose of brandy. I have found that Coolies like rum and water sweetened with sugar, and flavoured with lime juice, and that it agrees with them well. A very small quantity per diem suffices. To my patients from the "Ellenborough" and "Liverpool," who were suffering from most severe forms of gangrene and sloughing pagedana, I gave nothing but rum and water, fresh fish, preserved meat, &c., as long as it lasted, and sweet potatoes and other fresh vegetables, together with flour, rice, curry stuffs, tamarinds, &c., as they had had on board ship. On this diet, and sea bathing, every case rapidly improved, and out of 96 I did not lose one case.

What was more extraordinary, the diarrhœa and bronchitis got well without any special treatment, showing clearly that these diseases were entirely constitutional. In fact, there was very little drug treatment, and I doubt whether the little there was did any good.

I believe if an ounce of rum were issued once a day to every Cooly, not an opium eater or gunjah smoker, it would have an excellent effect. So much for additions. The only article I would diminish is the rice (to be replaced by flour) and six sevenths of the tobacco. The quantity of this latter article is proposterous, and certain to act most injuriously if smoked to such excess, both by depressing the nervous system and by aggravating diarrhœa and dysentery. An extensive experience of this latter disease, both in Turkey, the Crimea, and the West Indies, has convinced me that few things are more injurious to a patient suffering from it than smoking tobacco.*

It may be objected that these alterations would entail great additional expense. I doubt this, as, if we compare the rates paid by the Emigration Commissioners to Australia and New Zealand, and consider what the dietary required is, and the additional space required, with the amount paid for Coolies to the West Indies, we shall see that the profits on the latter must be very large indeed. I see that the contract prices to South Australia per statute adult during the season of 1866–67, as given in the Commissioners' Report, page 74, were—

Per Statute Adult.								Days on the Voyage.
£	*s.*	*d.*						
12	6	9	-	-	-	-	-	82
12	0	11	-	-	-	-	-	96
14	14	9	-	-	-	-	-	96
12	18	9	-	-	-	-	-	119
14	6	0	-	-	-	-	-	99
13	15	9	-	-	-	-	-	88
13	14	0	-	-	-	-	-	91
13	18	4	-	-	-	-	-	90

The amount paid to Queensland for a much more protracted voyage, ranging from 98 to 123 days, varied from 12*l.* 16*s.* to 14*l.* 19*s.* To New South Wales the rate varied from 12*l.* 6*s.* 11*d.* to 13*l.* 19*s.* 6*d.*, and the number of days from 80 to 123, and the mortality on 3,022 souls embarked was only 17, or ·56 per cent. The average rate paid was only 12*l.* 16*s.* 1*d.* Now, if it would pay shipowners to convey emigrants to these places at such a rate, giving them such a dietary, surely it would pay them better to bring Coolies here who would not require anything like such an expensive dietary. The freight actually paid is, I believe, a little over this sum.

But one measure which, I venture to say, ought to be adopted, and I advocate it, of course, on sanitary grounds alone, is to place the whole of the transport of the immigrants in the hands of one firm or company, to be held *quandin se bene gesserint*, interpreting that term stringently. A step in this direction has been made by his Excellency the Governor, in giving the contract for one year to one firm. But this, I venture to say, is not going far enough. The experience of that firm and the Captains it employs may be entirely lost next year, and we may have to begin again with raw hands who know nothing and care very little about Coolies. An illustration of the kind of feeling which it is most desirable to create and encourage was shown to me to-day (May 4th) on my inspection of the ship "Ancilla," which arrived with Coolies. She had embarked 324, of these only one died. There were three births on the voyage, and of these one infant died. She consequently landed one more than she embarked. The moment I got on board the Captain proclaimed these good news, and loudly boasted that no other ship in the two years had done the same. He declared that *he knew* he should do it, and he meant to do it.

Now, it must be perfectly evident that the experience this Captain had acquired, the pride he takes in his success, and the interest he shows in the welfare of his human cargo, are feelings which cannot be expected to animate those who make one chance voyage with Coolies, think them perhaps a great nuisance, and do not wish to have anything more to do with them.

Another great advantage which would result from giving the transport to one firm would be that, in the event of any Captain or officer neglecting his duties, small fines may be inflicted on the owners who would recover them from the person at fault. Each Captain would find it to his interest zealously to second the efforts of the Surgeon, instead of yielding (as they often do) only a sullen and reluctant obedience to his orders.

Of course, it would be easy to make some arrangement by which the contract price might be regulated by the average freights.

Even supposing that I am wrong in my conjecture that the expenses would not be increased, and that it would be necessary to pay a pound or thirty shillings a head more for the Coolies, I

* It may be as well to mention that the writer is not an anti-tobacco fanatic, but has been for many years a habitual smoker.

believe it would be an economical outlay for the Colony, for it is certain, that the chief loss on indentured immigrants arises during their first year, and that the sickness among them is then very great.

But it must be clear that a sharp attack of fever, or dysentery, or bronchitis on board ship, is an exceedingly bad preparation for hard work in the cane field, and that the diseases from which he has suffered on the voyage are just those, which not only weaken him at the time, but render him very liable to a recurrence of them. There can be no doubt that the planter who takes an immigrant who has had no illness during the voyage will have a much better labourer than he who takes an immigrant who has just recovered from an attack of sickness.

I have now finished this inquiry, which has extended much beyond what I originally intended. My apology for its length must be the extreme interest and importance which the subject possesses in this Colony.

I will now briefly sum up the conclusions arrived at in the second and third parts.

1st. That looking at the known constitution and habits of the Indian immigrants, we should expect that he would suffer severely from the depressing and debilitating effects of a long sea voyage to an unknown country.

2d. That this is proved to be the case by the statistics given in the first part.

3d. That the best means of combatting this state would be to give him a more nutritious and stimulating diet than his ordinary one.

4th. That his present dietary does not fulfil that indication.

5th. That it ought to contain a much larger proportion of nitrogenous ingredients than it does.

6th. That he should have as large a superficial space allotted to him as the European emigrants.

7th. That the whole transport of emigrants should be placed in the hands of one responsible firm, under such special regulations as to diet, &c., as may be thought desirable.

I have the less hesitation in submitting these views for the consideration of his Excellency the Governor, because not only do I believe them to be consistent with sound physiology and common sense, but because they are in accordance with those entertained by men who have had much larger experience of Coolies than I can pretend to.

Among these I should include all the Surgeon Superintendents with whom I have conversed. I feel sure, moreover, that my conclusions will in the main meet with the approval of the Agent General of Immigrants, Dr. Mitchell, who in his official reports has uniformly and persistently striven to show the necessity of good food and proper sanitary regulations for the health of the Cooly. Had his wise suggestions been carried out in their integrity, this Colony would have been saved many thousands of pounds, to say nothing of human suffering and lives. It is to Dr. Mitchell that every improvement in the sanitary condition of the immigrant is due, and I think that we may infer that to him too is owing something of the enormous difference between the mortality on board Trinidad Cooly ships, and those going to a neighbouring Colony.

I have great pleasure in acknowledging the facilities he has afforded me for making this report.

No. 2.

QUESTIONS regarding Subsoil Drainage and other Improvements of India Stations, laid before the Army Sanitary Commission by Dr. Cuningham, Sanitary Commissioner with the Government of India, together with the Replies of Commission.

INTRODUCTORY REMARKS.

Drainage of ground occupied by cantonments involves considerations of health as well as engineering details. Questions of health and points of detail will probably be found to differ somewhat at almost every station, and no general statement can be made on the subject which could be safely followed as a guide under the ever-varying circumstances which present themselves over so great a country as India.

When this subject was formerly under consideration of the Army Sanitary Commission it was, after mature deliberation, decided that the "Suggestions" prepared by the Commission, by request of the Secretary of State for India, should be limited simply to an enunciation of general principles of works, and that the application of those principles should be left to the unfettered judgment of the engineering authorities in India, after a careful local inquiry at each individual station which it was proposed to improve.

The views of the Commission on this point are given in the introduction to their "Suggestions," and there is nothing in the present questions which should induce the Commission to depart from them.

Any reply now given regarding drainage of Indian stations must be considered as only explanatory of what has been already stated on this matter in the "Suggestions;" but as the application of these

principles in any special case must necessarily be influenced by the results of local inquiry, it may be advantageous to preface this reply with a few remarks on those sanitary points, which should be ascertained and weighed in regard to all stations which it may be proposed to improve, before any works are planned or executed.

Sanitary improvements must necessarily rest for their justification on sanitary requirements, and these requirements can only be ascertained by a careful study of the locality, including the prevailing diseases, and their causes traced backwards to removable local conditions.

The first step in improving any station must, therefore, be to prepare disease and mortality records for British and native troops, prisoners, and civil population, so far as it may be practicable to obtain returns of the last of these.

A careful analysis must then be made of the facts in order to ascertain to what diseases the sick and death rates of the locality are due.

In tropical stations generally the most important diseases are those included under the so-called zymotic class, especially of the miasmatic order.

Much is already known regarding the local favouring conditions of this type of diseases; but in examining Indian stations, some will be found in which the total amount of miasmatic disease is less than in others, and the relative prevalence of single diseases, fevers, cholera, dysentery, &c., will be found to differ at different stations. A careful comparative analysis of local climates, especially as regards daily thermometric range and rainfall, local topographies, and local sanitary conditions of different stations, would no doubt throw much additional light on the whole question of causation, and afford useful data for guiding the sanitary engineer in his work. The relation of distant sources of malaria, often far beyond the boundaries of stations, to the health of troops, and the influence of native populations beyond cantonment boundaries, require very careful consideration in all such local inquiries.

Within the cantonment boundary, and immediately outside it, the points requiring special notice are as follow :—

(*a.*) The geological nature and relations of the surface soil and subsoil.

(*b.*) The condition of surface and subsoils as to permeability to moisture, prevalence of surface fogs, &c., ascertained during dry, moist, and wet seasons, in relation to the prevailing temperatures of the air and earth.

(*c.*) The chemical constitution of surface and subsoils of stations, with special reference to the amount of water and organised matter they contain. Detailed analysis of soils is almost as important in warm climates as the analysis of waters.

Weighing soils before and after drying will give the proportion of water.

Weighing after drying, and again after burning, will give the amount of organic matter sufficiently near for immediate practical purposes.

(*d.*) Analysis of water as now being carried out in India.

(*e.*) The general configuration of the surface and its levels, with reference to corresponding data for the surrounding district, including the question of natural surface drainage and outfall.

(*f.*) The depth of water line from the surface in wells at different seasons, especially during the rains; but this by itself cannot be depended on as showing the water level in the subsoil, unless water had ceased to be drawn for a sufficient time to allow the water level to be restored; because the well is a subsoil drainage outlet, and the level of water in it depends on the amount of water drawn. Trial wells or artesian bores made at different points of the surface, and at different seasons, will enable the subsoil water level to be given with accuracy in plan and section.

The state of river banks and foreshores at different seasons, as to extent of evaporating surface, rise and fall of water level, rise and fall of water level in tanks, jheels, &c.

These elements, when studied with relation to disease and mortality tables, will afford reliable data for discussions on questions of subsoil drainage.

Introductory Remarks.

Reports on proposed cantonment improvements should of course include the sanitary state and requirements of adjacent towns and villages, the state of bazaars, cleansing, the condition of buildings, barracks, hospitals, quarters, &c., amount and nature of vegetation, influence of ravines, jheels, nullahs, river banks, broken ground, nuisances, &c., on the health of troops and civil population. These points require simply to be alluded to here, as the principles on which they should be dealt with have been already sufficiently indicated in the "suggestions" referred to.

Supposing that a report on any given cantonment is about to be drawn up after sufficient inquiry on the points briefly indicated above, and that the question of subsoil drainage (as one of the questions only) requires to be decided; we should reply to the queries propounded by the Sanitary Commissioner with the Government of India, at least as far as it is possible to do this without specific local examination, as follows :—

Questions respecting the subsoil drainage of cantonments.

Questions.

(*a.*) "In what soils, and

(*b.*) "Under what circumstances is subsoil drainage calculated to improve the health of stations?"

Replies.

Subsoil drainage in climates with excessive rainfall, can never be depended on by itself to remove rainfall. Heavy rains must pass away over the surface, and the first step in freeing the ground of stations, and in their vicinity, from excess of moisture must be by improving surface conduits and valley lines of outfall for this special object. As much of the rainfall as possible should be passed as rapidly as can be out of the station to a safe outfall by well-formed surface drains, and all holes or hollows where water lies after rain should be levelled, filled up, or drained.

When this has been done the question of subsoil drainage becomes narrowed within the limit of freeing the subsoil as quickly as possible from water which has sunk into it, and which cannot by any natural outlet escape with sufficient rapidity or to such a depth below the surface as to prevent the generation of malaria.

We have pointed out in our "suggestions" that it is not so much the amount of rainfall as the hygrometric condition of the subsoil afterwards, which fosters malaria and malarial diseases.

In selecting new stations, those subsoils which trial holes dug in them show to be wet or water-logged even in wet weather, should be avoided. But in existing stations soils of this class should be subsoil drained on the principles laid down in our "suggestions," and without reference to the character of the subsoil.

Lines of drain tiles require to be laid closer in retentive soils than in porous soils. Where alluvial soils are apt to crack during hot dry weather, precautions should be taken to prevent the drainage tiles being injured or displaced by contraction of the soil.

In loose soils precautions should be taken to prevent the soil pasisng into the drain tile joints.

The necessity for subsoil drainage in any given case must be determined by the amount of malarial disease and by the hygrometric condition of the subsoil itself, to be ascertained, as already stated, by trial holes at a sufficient number of points, not only during the dry season, but during the rainy season and the period following the rainy season.

It does not follow that a subsoil which is apparently dry on a chance examination during a dry season is a healthy subsoil. The quickness or slowness with which the hygrometric level falls below the surface of the ground is an important element in the question of health.

Subsoil drainage is mainly intended to lower the hygrometric level after rainfall as rapidly as possible, and no soil which does not of itself accomplish this result, with as much facility as drain tiles would lead to it, should be left undrained.

Our answer, then, to the first question must be that the need of subsoil drainage at any given station must be decided irrespective of the geological nature of the subsoil, and that wherever the subsoil does not free itself rapidly from moisture after rainfall there should be subsoil drainage.

QUESTIONS.

QUESTION.

"Is subsoil drainage useful—

"(*a.*) In deep, loose, porous, sandy soils? or,

"(*b.*) Where there is no underlying stratum of clay or other impervious medium?"

REPLIES.

REPLY.

The reply we have given to the preceding question includes an answer to the present one.

It is not often that towns or stations are built on a perfectly level homogeneous self-draining sand. But if such should be the case, then the reply would be that with proper care and under the topographical conditions supposed, such a subsoil might possibly retain its healthy character (if statistics showed that it was healthy), irrespective of any artificial subsoil drainage.

But if there were irregularities of surface, or slopes, the conditions would be changed, because the rainfall on the higher levels would seek an outlet for itself wherever the outlet was easiest, and it might happen that in a self-draining sandy soil sloping ground and hollows, especially at the lower levels, might give out malaria and cause disease, because the drainage water had accumulated in such situations.

Instances have not been unfrequent where miasmatic diseases have appeared in huts erected on what at first sight was apparently dry self-draining sand, but was found on examination to be damp, for the reasons specified.

The sand on which Aldershot camp is situated has been drained with advantage, and the sand of Aldershot sewage farm has been improved in the same way. The ground in both cases slopes more or less to an outfall, and it was found that subsoil water had a tendency to crop out or lodge at the lower ends of the camp slopes, indicating its presence in the first instance not by apparent excess of dampness, but by the existence of miasmatic disease among the inmates of huts built on the ground, so that additional drainage precautions had to be taken in the locality.

It is highly probable, besides, that the majority of sandy subsoils are not homogeneous. They are frequently interspersed with soils of other kinds. Clays and the like, very thin layers of which would be sufficient to alter the relations of the sand to rainfall, or porous sands may fill up hollows in other retentive strata at a certain depth below the surface. In either case the sand might become charged with moisture drawn up from the hollows by capillary attraction and give off malaria.

Before it can be said that any sandy soil does not require subsoil drainage it would have to be examined with precisely the same care as any other subsoil and with the precautions already mentioned.

If a flat sandy soil were found tolerably free from organic matter, and if the soil discharged itself of superfluous humidity equally all over, and rapidly after rainfall, then the question might be raised as to whether subsoil drainage was necessary in such a case.

Suppose it were decided that the local conditions were so satisfactory that subsoil drainage was not required, we should then have to consider a well-known fact with regard to soils of this class, namely, that whether these soils continue to be healthy when occupied by stations or towns, or whether they will eventually become very unhealthy, depends entirely on the manner in which the surface is used.

Sand absorbs sewage and foul water with as much facility as it does pure rain water, or pure river water. This absorbing power of sand has led to most serious results to health when feeders have been conducted over its surface for supplying pure water to a town or station from a river or stream, even at a considerable distance. In instances of this kind the first indication of danger in warm climates has generally been, not dampness of subsoil, but severe outbreaks of epidemic diseases. Pure rain water itself will even become foul water before it enters the sand if it falls on refuse filth or other refuse matters left on the surface. Some most severe outbreaks of epidemic disease have taken place in dwellings built on sandy soils, and have been traced directly to the foul state of the surface and subsoil from cesspits or from foul water or sewage draining into these porous soils.

An incidental advantage of subsoil draining sandy soils is that it affords to the rainfall a ready means of washing impurities out of the superficial layers of subsoil, and so tends to diminish malaria.

There is hence a special class of requirements incident to the occupation of sandy subsoils, whether they be subsoil drained or not, which are imperative, namely, that the surface should be kept clean, that there should be no cesspits or self-draining manure heaps, and

Questions.	Replies.
	that provision must be made for the continuous removal to a distance of all impurities, solid and fluid, neither of which should ever be allowed to enter the ground.
Question.	Reply.
"What are the details of the measures by which subsoil drainage should be carried out?"	The general principles of subsoil drainage in relation to surface drainage works are given in our "suggestions," pages 3 and 4. Further details will be found in a minute on the subject prepared and issued by the General Board of Health, copies of which were sent to India by the Army Sanitary Commission, for the use of the Presidency Sanitary Commissions, a number of years ago. The work of Mr. Parks on land drainage may also be consulted with advantage. The whole subject has been thoroughly discussed, and much experience has been obtained in applying subsoil drainage in different soils. The details are of an ordinary engineering character, and come within the scope of the engineer's duties. Like other engineering details, they would have to be worked out on the spot and under the conditions to which they had to be applied.
Question.	Reply.
"What extent of ground in the vicinity of the station would it be advisable to embrace in any scheme of subsoil drainage?"	This is a local sanitary question requiring a local answer after a careful inquiry. The primary object of surface and subsoil draining a cantonment is to remove superfluous moisture from the ground under and in the vicinity of barracks, hospitals, and other buildings, so as to diminish the immediate local ground malaria. And there may be positions where cantonment subsoil drainage would be sufficient for these purposes of health. But it is evident that the most perfect subsoil drainage works carried out within the cantonment boundary will not remove excessive moisture or malaria from broken wet surfaces of ground or from malaria-producing ravines or jheels outside the boundary. In such cases subsoil drainage outside the cantonment may not always be necessary; levelling and draining the surface may be sufficient. The effect of ground malaria will diminish with the distance of its source from occupied buildings, other things being equal; but it may still exist, and this to a greater degree, immediately outside a cantonment boundary than within it. It would not therefore be safe to decide that the subsoil drainage of a cantonment would by itself be sufficient for health without an examination of the vicinity to such distances and in such directions as the configuration of the country may indicate, bearing in mind also that damp or wet ground outside the boundary may be productive of injury to health at a greater distance on the side of a cantonment from which the wind blows during the fever seasons than on other sides. It may be found in such cases that improving watercourses and natural valley lines of outlet, levelling broken ground, filling up pits and holes, and similar improvements in surface drainage, may be sufficient; but there may also be found localities in which the subsoil is more or less wet, and in such cases subsoil drains may be the only means of removing the water, and should be resorted to. When malaria clearly comes from a distance beyond the immediate vicinity of a cantonment, it would have to be dealt with on other principles. In such cases the evil may be diminished by screens of quickly growing bamboos or trees; but the ultimate improvement of extensive districts of this class can only be expected from larger agricultural drainage works and proper culture and cropping.
Cultivation within Cantonments. "Is it advantageous or otherwise to keep large areas of ground within cantonments denuded of vegetation? "Would it improve the health of cantonments to encourage vegetation within their limits?	It will be better to deal with these questions together, because they all refer to the same point, namely, the influence of culture on health. It may be safely stated as a general answer to the questions that wherever in a hot climate there is moisture sufficient to sustain vegetation in any subsoil near human dwellings, the ground had better be cropped; and wherever from peculiar local circumstances such ground does not admit of being cropped, the healthiness of the locality can be improved by subsoil drainage of the ground. There are many localities, however, in India as elsewhere, in which no amount of culture will by itself absorb the subsoil moisture to a

Questions.	Replies.
"If so, to what extent, and of what kind of culture?"	sufficient depth to keep ground in a healthy condition. In these instances drainage and agriculture must go together. As a general rule subsoil drainage improves the healthiness of a subsoil not only by withdrawing moisture but by admitting air into the body of the soil, and so increasing its productive power. Vegetation promotes dryness by increase of evaporation. It has been calculated that 200 lbs. of water are evaporated to grow one pound of woody fibre either in timber or grass. Vigorous growth on drained or cultivated ground, if so conducted as not to interfere with ventilation, purifies the atmosphere, as well as the subsoil. It follows from what has been said that subsoil drainage with cropping would be beneficial to the health of most stations. This must, however, be taken merely as a general statement, because it is quite possible to use ground for crops in such a way as to do harm rather than good, and this risk might be incurred at any Indian station if the culture of ground within or near its limits involved as one of its conditions the locating of a population of native cultivators on the land, and this on account of their filthy habits, or if the culture itself were of an unhealthy character. The best and safest covering for bare ground near dwellings is grass or some similar crop wherever it will grow. Vegetables to be used by troops would also be advantageous. Tall vegetation affording facilities for committing nuisance should be avoided. Wet culture, that is, culture requiring the ground to be flooded or kept constantly wet, should also be avoided, because wet culture brings on the ground an excess of the very element, namely, water, which it is desirable to remove. Cultivation would have to be properly regulated as to times and seasons in cases where much movement of earth was necessary.* Trees properly trained so as to afford shade without interfering with ventilation can be grown with advantage. In any case provision should be made for the immediate removal to a distance or for burning of all dead vegetation. The extent to which culture can be introduced into cantonments will depend on the amount of disposable ground not required for parades and other purposes. If culture be introduced at all, there is no reason why the extent should have any limit except that of the area disposable for the purpose. The entire success or failure of culture as influencing the sanitary condition of a cantonment will depend on the care and system with which it is carried out. It had better never be tried if after having been carefully introduced it is allowed to fall into neglect. The cultivation of a cantonment should be made ornamental as well as useful, and should be kept so.

Question.	Reply.
"Would irrigation by sewage of cultivated ground within cantonments be advisable?"	The subject of sewage irrigation as applicable for the disposal of barrack sewage was considered by the Commission some years ago, and in the absence of knowledge of local conditions, it was proposed as a general principle that no land should be irrigated within 500 yards of barrack buildings. But the distance in any given case would have to be decided with reference to prevailing winds, to the quantity of sewage, and to the nature of the soil. In hot climates the distance, under corresponding conditions, would probably have to be greater than in cold climates. Much additional experience has been recently obtained, tending to show that sewage irrigation, if carefully applied, is a perfectly safe expedient. The sewage farm at Aldershot is about 80 acres in area,

* The following Algerian experience suggests useful precautions in clearing and cultivating ground in hot climates:—

"The older colonists agreed that although the first work of clearance and cultivation is invariably attended by fever, much of this sickness could be avoided by selecting the proper period for clearing and draining, namely, the colder season, leaving the land to be baked during the summer heats previous to actual cultivation, and by sanitary precautions. These consist in avoiding commencing work till the sun has risen, the use of generous diet, careful selection of drinking water, good clothing, ablution and change of clothing after work, not living in close vicinity to the work itself, and frequent use of coffee. With these precautions they asserted that the clearance of waste land and bringing it under cultivation, was not attended with serious risk to health."—(Report on the causes of reduced mortality in the French Army serving in Algeria, p. 20.)

QUESTIONS. REPLIES.

and in summer receives the sewage of 12,000 people and 2,286 horses. It lies to leeward of the North Camp, and its edge is 500 yards from the Camp. Occasionally, when the wind blows over the farm towards the Camp, a slight odour is experienced. But the Camp is remarkably healthy. There are a number of instances in England of sewage irrigation from towns and large establishments carried out within 200 or 300 yards of dwellings without appreciable nuisance.

There has as yet been no instance of injury to health from sewage irrigation. One of the healthiest barracks in the United Kingdom is Piershill, immediately outside the walls of which lie the old extensive irrigated meadows receiving the sewage of Edinburgh. Complaints have been made of nuisance from careless application of sewage, but not to any great extent. Living plants are the best "disinfectants" and "deodorizers."

The Madras sewage farm will very shortly afford all the experience required in dealing with the question in India, and it would be better to watch its results before arriving at a decision.

QUESTION.

"Would the use of manure from latrines on such lands, if carefully carried out, be attended with any danger?"

REPLY.

The reply to this question must be similar to the one given respecting sewage irrigation.

Latrine matter can be safely used for manure if it be put into the ground in proper proportion and at a sufficient distance from buildings to avoid nuisance during warm, moist, or rainy weather, and if the ground be cropped at the same time.

There should be no such a thing allowed as burying latrine manure in masses; the proportion of manure applied should be adjusted to the amount of earth and to the requirements of the crop.

The same rules as to direction of prevailing winds, the amount of manure used, the nature of the soil, and the distance from buildings, are applicable in this instance as in sewage irrigation.

It is very probable that at many stations the use of latrine manure would necessitate the application of water to the crops, and this circumstance would bring the application of latrine manure under the same conditions and precautions as those necessary for sewage irrigation.

The safest and cheapest way of applying manure to land is however in the form of sewage. Manured or sewaged land should be subsoil drained.

As the dry earth system of conservancy has been largely introduced into India, it may be useful to give the comparative value of ordinary town sewage in England where watercloset are in use, and its value where watercloset refuse is excluded from the sewers and separately removed from houses.

The facts are stated in the Report of the Royal Commissioners (Sir William Denison, Dr. Frankland, and Mr. J. C. Morton), on the Pollution of Rivers, vol. 1. The following are the averages:—

COMPOSITION of SEWAGE in PARTS per 100,000.

	Total solid matters in solution.	Organic carbon.	Organic nitrogen.	Ammonia.	Nitrogen as nitrates and nitrites.	Total combined nitrogen.	Chlorine.	Suspended matters.		
								Mineral.	Organic.	Total.
37 midden towns.	82·4	4·181	1·975	5·435	0	6·451	11·54	17·81	21·30	39·11
50 watercloset towns.	72·2	4·696	2·205	6·703	·003	7·728	10·66	24·18	20·51	44·69

The Commissioners continue:—"These analytical numbers show a "remarkable similarity of composition between the sewage of midden "towns and that of watercloset towns." "For agricultural purposes "10 tons of average watercloset sewage may in round numbers be "taken to be equal to 12 tons of average privy sewage." The average quantity of chlorine in 100,000 parts of watercloset sewage is 10·66, while in midden-towns' sewage it is 11·54, indicating the proportion of urine in the sewage, and the influence of the additional

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water in watercloset towns in diluting it. "The retention of the solid excrements in the "middens is not therefore attended with any "considerable diminution in the strength of the sewage." "Neither "is the case substantially different where earthclosets are substituted "for Lancashire middens, for the sewage from Broadmoor Lunatic "Asylum, in which these closets are partially used, exhibits no ex- "ceptional degree of weakness."

These facts, resting on a firm scientific basis, have an important bearing, not only on the question of sewage irrigation, but on the question of station drainage in India.

We showed this in our minute on "the dry earth system of sewage" (March 8th, 1869); and the Royal Commissioners arrive at a similar conclusion in stating that "it seems hopeless, therefore, to "anticipate any substantial reduction of sewage pollution by dealing "with solid excrementitious matters only." It follows that to trust to dry earth conservancy for improving the health of towns, while ordinary station or town drainage is permitted to soak away in cesspits or on the surface is simply to poison the subsoil with sewer water, which if collected and conveyed in drain pipes would become a valuable manure. The question may now be considered as settled by scientific investigation, that the sewage of inhabited buildings should be treated as a single element, whether as regards health or agriculture, and also that to divide this sewage into two parts, and to remove the parts separately is, as we have stated elsewhere, to pay double where one payment would answer every purpose.

QUESTION.

"Where native towns are situated so near cantonments as to prejudice the health of troops, what special measures can practically be taken in regard to these towns, it being borne in mind that there are great difficulties in dealing with native towns which do not exist in cantonments?"

REPLY.

The causes of unhealthiness of native towns and the general principles of improvement applicable to them have been already discussed in our "suggestions," but since these were prepared some experience has been obtained in India, especially at Calcutta and Bombay. The procedure at the last-mentioned city appears to have been efficient, if we can judge by its influence on health.

The present question refers not so much to the permanent improvement of native cities and towns as to diminishing the injury caused by them to the health of troops near them, by the adoption of temporary expedients until permanent improvements are carried out.

The reply must therefore be limited to the terms of the question.

No man ought to be permitted in India, any more than he is permitted in England, to use his property or rights in such a way as to injure his neighbour. This is a fundamental principle in the question, and it follows from it that no man can sustain a right to keep a dunghill or a cesspit within his premises, if, by doing so, he injures anyone else; and no man has a right to create a nuisance to the detriment of his neighbour.

Further, it is an admitted principle in British sanitary legislation that a man who creates a nuisance must either abate it himself, or the community must compel him directly or indirectly to abate it.

It appears that at some stations nuisance is experienced from wind passing over native towns near barracks. There is also evidence that injury to health and life arises from this, especially during epidemic seasons.

The chief sources of danger in Indian towns and villages appear to be the state of road surfaces and of the surface drainage, filthy dwellings and compounds, dungheaps, cesspits, filthy native habits, and, indirectly, impure water, predisposing the people to epidemic attacks near troops.

Bombay experience has shown that it is perfectly possible to deal with these sources of ill health successfully by sanitary police regulations diligently enforced; that people will even improve the surface drainage themselves or have it done at their own cost; that they will submit to be kept clean and pay for it; and that there is little difficulty in inducing them to conform to sanitary precautions if their object be explained, and strict supervision kept up to see that the regulations are carried out. As the final object is to induce the people to attend to their own health and habits, every effort should be made to enlist the feelings of the people on the side of improvement.

Bearing this Bombay experience in mind, the only reply we can

QUESTIONS.

REPLIES.

give is that indicated above, namely, that all native towns, villages, and bazaars near cantonments should be brought under the operation of a rigid cleansing police; that the surface drainage should be improved, the outskirts of towns, villages, and cantonments to a sufficient distance protected from nuisance, and that wells belonging to towns, villages, and bazaars should be cleansed, the water supply examined, improved, and protected from sources of impurity, or new wells dug where existing wells are irremediably impure.

There is every probability that if these precautions were rigidly enforced in native towns and villages much of the ill health, especially from epidemic diseases, would be removed, both as regards the people themselves and the troops in their vicinity, without the execution of any costly works, although there would be scope after all was done for the introduction of sanitary works, but in most instances these works would be more beneficial to the health of towns themselves, than to the health of cantonments at a distance. There appears to be no reason why the labour for simple sanitary improvements should not be supplied by the people themselves with such assistance as may be necessary.

A few instances of thoroughly improved native towns and villages would do more to enlighten the people on their true interests in this matter than anything else.

Water Supply.

QUESTION.

"Any recent information in regard to sources, works, &c., including the smallest amount of water per head which should be sufficient to remove barrack impurities by means of pipes, together with means of economising water, it being borne in mind that as regards the case of nearly all Indian cantonments there are no existing sources which form natural head works?"

REPLY.

The most recent information regarding Bengal water sources is that afforded by Dr. Macnamara's Reports.

The results may be stated generally as follow:—

1. That with the exception of a few wells loaded with saline impurities derived from the soil, Bengal waters are not generally hard waters, and naturally they are good and wholesome in quality.

2. That nevertheless the majority of water sources are more or less polluted by organic and saline matters not due to the sources, but proceeding from the following preventible causes:—

(*a.*) Polluted subsoil drainage finding access to wells, from fouling subsoils of stations and towns where wells have been made by sewage and other decomposing matters, cesspits, filthy habits, and the like.

(*b.*) Bad methods of drawing and distributing water. Slopping the surface round the well's mouth, and passage of foul water back into the well. Careless and filthy habits of water-drawers using dirty cords and dirty vessels; water slopped over their feet falling back into wells.

(*c.*) Want of protection round and over the mouths of wells, whereby filth, decaying substances, and other impurities obtain access to the water.

(*d.*) Suicides and accidental drownings from the same cause. All the drownings in Bombay Presidency in 1868, amounting to 1,608, took place in water sources. Of this number there were 1,101 deaths from accidents and suicides in wells.

(*e.*) Carrying, drinking, and cooking water in skins scarcely ever cleaned, and often used for carrying water of bad quality.

3. From these circumstances it follows that well waters are of uncertain constitution, and that so long as the existing sources are left without protection, and are exposed to any risks that may arise from additional subsoil impurity or from careless native habits in drawing and carrying water, so long will the health of persons using the water be exposed to preventible risks.

As regards quantity, the Commission has already stated that no more water is required for the purpose of keeping drains clear than is required for the domestic consumption of the population using the drains; in other words, sewers and drains are simply intended to remove water brought into a station or town for domestic use in an economical and continuous manner, and they are not intended to make any special demand on the water supply for the mere purpose of keeping them free of deposit.

The only question therefore is the quantity of water required for domestic use.

We have already estimated this for Indian stations at about 12 gallons per head for barracks, and 30 to 35 gallons a head for hospitals

QUESTIONS. REPLIES.

per diem; of this 2½ or 3 gallons per head would be required for waterclosets or latrines, and this amount would have to be deducted if the dry-earth system of conservancy or any similar system of dealing with latrines were adopted.

Under certain circumstances it might economise water to use bath water for latrines.

It is evident from the local topography of many Indian stations that such a water supply as is here stated must be pumped up either from rivers or from deep wells.

India itself has recent examples of several methods of supplying water continuously.

Bombay water is provided by head pressure.

Madras will be supplied more or less on this principle.

Calcutta receives its water from the Hoogly and filters it.

Deep wells dug in porous strata near rivers, and tunnels carried in porous strata under rivers, have been used in Europe as water sources from which water is raised to a head by pumping.

Water from deep wells dug in any water-bearing strata yielding pure water can be raised by pumping to a sufficient head by stand pipes or water towers. The greater part of the vast population of the metropolis is supplied with water pumped partly from rivers, and a small portion from wells.

The general principles of water supply of Indian stations have been already discussed in our "suggestions," which contain all the points required for dealing with the engineering aspects of the question.

In draining buildings at very flat stations it is well to provide means of flushing main lines of drainage independently of the action of the flow, but this can be done without additional water by using a small portable tank filled with bath water, and discharging its contents suddenly into the head of the drain.

Various forms of water tap have been used for economising water, but in practice the least liable to wear and accident is an ordinary watercock with a weighted handle which allows water to escape only when it is held up, and stops the escape by simply being let go.

The Commission would repeat here that, as far as has yet come to their knowledge, there is nothing to prevent any military station in India being supplied with water sufficient for all purposes by simple methods long tried by experience and familiar to engineers who have been engaged in British town improvements.

It may be safely stated also that no population which has once obtained the benefit of a water supply would ever voluntarily revert to the methods at present in use in India; whatever the difference of cost might be; if indeed the difference be not always in favour of supplying water by engineering works. The following data given long ago in our "Suggestions" illustrate the question of expense:—

"A steam engine working with coals at 20*s.* per ton will raise "90,000 gallons of water (900,000 lbs. or upwards, or 400 tons "weight) 100 feet high, at a working cost of one shilling. One "man making six journeys per hour with two gallons or 20 lbs. "weight, and working at this rate eight hours, would carry up to "an elevation of 100 feet, 96 gallons of water, or 960 lbs.; so that "it would require the united labour of upwards of 900 men "working eight hours to perform 1*s.* worth of steam-engine work, "such as is daily performed at the large waterworks pumping "establishments for London." Small steam engines would not be so economical, but they would be far cheaper than manual labour.

Barracks at Hill Stations.

QUESTION.

"What would be the best style of barrack for hill stations, with due regard to elevation and climate?

"What amount of superficial area and cubic space per man would be sufficient at hill stations?

REPLY.

The answer to these questions would probably differ somewhat at every hill station. Everything depends on the local climate, elevation, exposure, and locality.

If any hill climate closely resembled those of British home stations, the amount of surface area need not exceed the home allowance, viz., 60 feet. In any semi-tropical climates, such as those at Malta or Gibraltar, the superficial area should not be less than from 70 to 75 feet per bed. This being decided, the cubic space would depend on the height of the room required for comfort at any

QUESTIONS.

REPLIES.

"Might the present allowance of 77 square feet be reduced without ill effects?"

given station, and this element may safely be left to adjust itself from experience already obtained in dwelling houses on the hills.

There are certain principles of construction applicable wherever a number of people occupy the same room, which should be observed in these hill barracks as well as in those of similar climates.

1. There should be windows on opposite sides of the room.
2. Each room should have a fireplace (a drawing of a warm fresh air grate for burning wood is given in our "Suggestions").
3. The size of the room will have to be to some extent determined by principles of economy as applied to the possibilities of sites available.
4. It is best wherever practicable to place barrack and hospital buildings on levelled ridges.
5. If sites must be selected on slopes, barrack and hospital blocks must always be placed with their ends, never with their sides, to the slope. To do the latter is to endanger outbreaks of epidemic disease among the troops. Sloping ground can be dealt with in one of two ways:—

(*a.*) It may be terraced so as to enable one end of the barrack room to be projected away from the slope, leaving a distance of 20 feet between the section of the slope and the end of the room nearest it. And care should be taken to cut off by drains all water descending to the terrace from the higher ground.

(*b.*) A platform supported on pillars may be raised on the slope and the barrack block constructed on it.

Verandahs and jalousies should be provided to protect the walls from excessive sun radiation, and the roofs should be made heat and cold proof, but thoroughly ventilated.

We have elsewhere stated that in healthy hill climates barracks may be built with two floors of sleeping rooms.

Hospital Accommodation for Native Troops.

QUESTION.

"What amount of cubic space and superficial area should be given in hospitals for native troops?"

REPLY.

The principle laid down by the Commission in respect to native troops in their own country is that the amount of space and area should be the same as that allowed to British soldiers at home stations.

From 90 to 95 square feet per bed in these hospitals is considered sufficient, and the cubic space per bed would depend on the height of the wards. When a hospital is constructed of small wards, each in a separate building like a hut, a smaller amount of space and area will suffice for health than in a large hospital building containing a number of wards. Local native customs in regard to healthy dwellings will sometimes afford useful indications in providing native troops with both barracks and hospitals.

Sanitary Apparatus.

QUESTION.

"Would it not be desirable to send to India a collection of specimens of sanitary apparatus?"

REPLY.

It would be very important to do so. There should be a collection kept for reference at the capital of each Presidency, showing the various kinds and sizes of agricultural tile-drains, drain-pipes, lavatory and bath apparatus, cooking apparatus, urinals, latrines, waterclosets, sinks, water-pipes, cocks, hydrants, filters, manhole-frames and covers, side-entrance frames and covers, sewer-flushing apparatus, &c. More practical information would be obtained by an inspection of apparatus of this class than from either descriptions or drawings.

Statistics.

QUESTION.

"Would it not be advisable to make arrangements whereby the movement of disease and mortality in India, especially from epidemics, should be concentrated for the information of the Government of India?"

REPLY.

It is necessary for the purposes of efficient control and to ensure correctness that each Presidency or Government should obtain, classify, and publish its own statistics in the manner now carried out in the three divisions of the United Kingdom and in the British colonies.

This is the only way in which efficiency can be obtained. But it is attended with some disadvantage, inasmuch as there is no common centre to which all the statistics can be transmitted, and comparisons made for public purposes; so that the movement of disease over

QUESTIONS. REPLIES.

the vast area of Her Majesty's dominions is never accurately known. This kind of knowledge is especially necessary in India, because although epidemics generally follow the same course in each division to the country, these destructive diseases may move in subservience to a common law, which it is of great importance to arrive at. At the present moment the want of correct information in regard to the movement of cholera in India is greatly felt, and the instructions issued by the Commission for conducting the inquiry now going on into this disease, take for granted that the facts of movement can be ascertained and rendered available for constant use by the Government of India.

This information could be obtained, however, without interfering with the local machinery by which statistics are collected. We consider it very desirable that the Supreme Government should be kept constantly informed as to the places, dates of appearance, and movements of all epidemic diseases, especially of cholera, throughout the entire extent of India.

We have stated in the instructions the statistical points of most importance as regards troops, prisoners, and civil population, and we have no doubt that arrangements could be made for the transmission of this information from all points of the country through such channels and at such times as the Government may consider suitable, and for its frequent publication.

QUESTION.

"Has the Commission any special suggestion to make regarding measures to be taken when stations are invaded or threatened with cholera, or regarding the evacuation of the affected places?"

REPLY.

The Commission has had this subject recently under consideration with reference to Dr. Murray's report on the treatment of cholera, and their views, as deduced from the most recent experience of 500 medical officers in India on this subject, given by Dr. Murray, are embodied in a special minute already sent to the Secretary of State for War and the Secretary of State for India.

Regimental Arrangements.

The questions under this head were considered by the Royal Commission on the Sanitary State of the Indian Army, and answers were given on the general principles involved in the questions. The Commission have, however, considered it advisable to communicate with the Director-General of the Army Medical Department, and he has been good enough to place at their disposal the latest information and experience on the subject.* It will be seen that the evidence on which the Royal Sanitary Commission reported has been confirmed by subsequent experience, and that all the facts point in the same direction.

QUESTION.

"What should be the composition of regiments sent to India, to avoid the losses consequent on allowing unsuitable men to go there?"

REPLY.

To this question the Royal Commission on the Sanitary State of the Indian Army gave the following reply (8vo Report, p. 126) :—

"That no recruit be sent to India under 21 years of age, nor until he has completed his drill at home, and that recruits be sent direct from home to India so as to land there early in November."

This recommendation does not appear to have been carried into effect.

Reports from medical officers of the highest rank and experience in India still point out too early service in India as a powerful predisposing cause of disease.

Inspector-General Dr. Muir states that one pregnant cause of the high rates of sickness and mortality among the European troops in India is the large number of boys and growing lads who are sent out.

* See Appendix.

QUESTIONS.

REPLIES.

The following table gives the facts for four regiments lately sent out :—

Regiments.	Number under 20 years of Age.	Number of Recruits not yet discharged drill.
92nd	239	116
1/6th	165	13
85th	155	96
2/60th	163	9

The last two regiments were quartered at Calcutta and Meean Meer, both peculiarly malarious localities.

Inspector-General Dr. Beatson has expressed a similar opinion as the result of his Indian experience. It is true that statistics show a less mortality at the younger ages of soldiers; but this is only an apparent advantage on the side of youth, as it resolves itself simply into a clear statement that the longer the residence in India the greater the mortality. To make age a test of mortality, the men of the different ages contrasted should have served the same time in India. But the experience of medical officers is, that sending unformed soldiers to India is one potent cause not of high death rates in the year or two after their arrival, but of a higher death and inefficiency rate in subsequent years, from the resisting power of their constitutions having been unduly weakened during the first year or two of immature service.

The Director-General informs us that he has received lately numerous reports deprecating sending young and delicate soldiers to India. The 92nd Highlanders suffered from typhoid fever soon after reaching India. This disease prevailed chiefly among the youths, who, as the preceding table shows, were in large proportion in the regiment. To this fact Deputy Inspector-General Monro attributes much of the prevalence of the disease. Immature men of the 21st Fusileers were the chief sufferers from malarial fever at Kurrachee, and on unformed constitutions in the 62nd regiment at Lucknow fell a large proportion of sickness, including cholera.

Many other instances might be adduced of similar results, but the fact is well known.

French experience in Algeria is to the effect that a soldier stands the conditions of service in that country with least damage at the age of 25. (Report on the causes of reduced mortality in the French Army serving in Algeria, p. 34.)

On considering the question in light of most recent experience, the Commission adhere to the recommendations of the Royal Commission on the Sanitary State of the Indian Army quoted above.

QUESTION.

"What arrangements could be made to ensure the arrival of troops in India at the proper season?"

REPLY.

The terms of the question are such as to render a direct reply very difficult.

There is no difference of opinion on the propriety of landing troops in India within the last two months of the year. To land them later, especially for service on the plains, is to incur a certain risk to health and life, which might be avoided if they were landed in November or December.

But when a large force has to be collected, conveyed by sea, and distributed over so great a country as India within so short a time, and when this process has to be continued year after year, it is evident that a larger cost must be incurred than would be necessary if time was not an object.

It is a question of cost of efficiency against cost of transport. But it is part also of a larger question, namely, the rotation of stations.

The general principle for adoption would apparently be to send out the troops for the most distant and least accessible stations first, and to locate those arriving latest at healthier stations, most easily accessible from the port of disembarkation. It is a well recognised fact that regiments suffer more the first year after arrival in India than subsequently, unless in the case of an epidemic invasion.

QUESTIONS. REPLIES.

Instances to the contrary, no doubt, may be found, but it is a fact nevertheless.

If as many of the most unhealthy stations as possible were abandoned, and if all troops on arrival were sent direct to hill stations, the time of landing would matter less than at present, because at whatever time troops might reach India they would, with improved means of communication, be within easy distance of healthy climates.

QUESTION.

"Also the departure of invalids from India so as to ensure their arrival at the proper season in England, and their selection at the most favourable time in India. The present system is faulty on both heads?"

REPLY.

Everything connected with the movement of men in India has undergone such changes of recent years that the present times of invaliding might be re-arranged with great advantage.

From information placed by the Director-General at the disposal of the Commission, especially from statements made by Inspector-General Beatson, Principal Medical Officer at Netley, it appears:—

That many men arrive at Netley as invalids who ought never to have left India. This occurrence is attributed to the fact that men who have been worn down by the heat of summer look so ill at the end of the hot season as to justify the belief that they really require a change; whereas many of them during the cold season would be so much improved as to be scarcely recognised at its termination.

It is hence considered that the invaliding Boards should sit at the end or beginning of the year instead of in October, the present time for these Boards, which was fixed when the means of locomotion in India were widely different from what they are now.

Another great evil arising from the existing invaliding arrangements is that men whose constitutions are shattered or who are labouring under organic diseases are embarked at such times as to arrive in the cold weather in England, to the imminent danger of health and life.

The "Crocodile" arrived on the 12th January last with invalids from India. There was a great mortality from pneumonia among them on the passage home, and after the men arrived in England. This was directly the result of too rapid change of climate.

It is simply repeating a well-known fact to state that one of the most dangerous experiments which an invalid with chronic disease or diseased susceptibility of chest or abdominal organs can make, is that of coming from a warm climate into an English winter or cold spring.

Any man who can stand such a change without injury is scarcely an invalid.

The Commission would recommend for consideration that invalids should be passed at such times as would enable them, after receiving their papers and reaching the port of embarkation, to go on board so as to arrive in England not earlier than April.

They would further recommend that medical officers should be required to certify whether particular cases should not be transferred to the hospital at Suez, which should be utilised as far as its limited accommodation (40 beds) permits, and detained there so as to enable them to reach England at a later date during the summer weather.

As it appears from the facts laid before the Commission that preventible suffering and risk have been incurred by invalids from want of clothing suitable for the rapid changes of temperature while proceeding northwards, the Commission would recommend the issue of additional articles of clothing being made at Suez.

QUESTION.

"As no general plan at present exists for locating troops at suitable stations on their first arrival in India, and for a tour of duty thereafter, so as to render their service in the country as little hurtful to health as practicable: — Would it not be advisable specially to consider the subject,

REPLY.

The Royal Commission on the Sanitary State of the Indian Army, after fully considering this subject, arrived at the following general conclusions as to what ought to be the basis of improved conditions of service in India (8vo Report, page 114):—

"1. To reduce to a minimum the strategic points on the alluvial plains, and to hold in force as few unhealthy stations as possible.

"2. To locate a third part of the force required to hold these points on the nearest convenient hill station or elevated plain.

"3. Never to trust to simple elevation as a means of protecting health, but while occupying the best available elevated stations, to place these (for they want it just as much as stations on the plains) in the very best sanitary condition."

QUESTIONS.

and to lay down some special practical plan, to be carried out so far as the exigencies of the service admit of?"

REPLIES.

It will be seen that the occupation of hill stations by a third of the force was considered by the Royal Commission as the fundamental condition of improvement.

Sir W. Mansfield, in a recent speech at the delivery of the annual Budget, is said to have referred to the location of troops, and stated that it was with great satisfaction he had been able to urge on the completion of the hill military stations at Chukrata and Raneekhet. The mortality in hill stations was insignificant compared with that in other parts of India, and he thought that arrangements should be made for the location of three more British regiments at hill stations, so that one-fourth of the entire British force might be always stationed in the Himalayas. There were great military reserves, and advantages now existing in the country, such as facilities of communication by which armies could be brought together in the least possible time, which were altogether unknown to their predecessors.

Information supplied to the Commission by the Director-General shows that experience obtained since the date of the Royal Commission Report is altogether to the same purport.*

The following is the ordinary routine of movement:—

A regiment arrives at Calcutta from England, and is sent to an up-country station, and thence moves onwards to Peshawur, thence to Central India or to Bengal.

If the regiment arrives at Bombay, it is sent to the Punjaub, moves eventually to Peshawur, thence to the North-West or to Oudh, and perhaps to a hill station, and thence to Central India.

The Commission can of course only look on the effects this method of proceeding is likely to have on the health of regiments.

It is an axiom that no regiment which has suffered from malarial disease at a malarial station ought to be moved into another malarial station, still less into a station more unhealthy than the one it has been suffering at before removal. It has unfortunately happened that the most malarial station in India, Peshawur, lies in the tour of duty of corps proceeding from other malarial stations, and this no doubt has been one cause of the excessive losses of regiments in the Peshawur valley.

There appears to be no regular tour to hill stations, and neither recruits nor newly arrived regiments are sent there.

Within the last few years some regiments have been twice at hill stations; one has been three times, others not at all.

The difficulties of introducing a regular rotation of stations, including hill stations, are not to be underrated. They are no doubt considerable, but with the experience obtained in India of late years they ought not to be insurmountable. As to the necessity of some improved arrangements of stations there can be no doubt.

The utilisation of hill stations to the largest extent being recognised as a prime necessity for the maintenance of the health of European soldiers in India, it is urged that some system to obtain this should be instituted. The evidence submitted to us goes to establish the fact, heretofore very generally admitted, that the real value of the mountain regions of India is in preserving health, and that their curative powers are comparatively small, especially to the subjects of organic disease.

Were this knowledge acted upon, it would follow that the present barracks for convalescent depôts in the hills might be chiefly used for regiments or wings of regiments, or newly arrived drafts: additions might readily be made to some of them for this purpose. Were the period for invaliding changed from October to January it might nearly always be determined what men would be likely to recover by remaining in the plains or by removal to the hills, and whom it would be advisable to send home; and were the principle recognised that sufferers from organic disease of any importance, and those whose constitutions had been seriously impaired, should be invalided to England instead of to the hills, the requirement of the latter as resorts for invalids would be greatly diminished.

The Commission are of opinion that for purposes of health, regiments on first arrival in India should be sent to the hills to spend their two first years' service there, and that the hill stations should be of sufficient number and capacity to accommodate one-third of the

* Vide Appendix.

QUESTIONS. REPLIES.

European force serving in India, by which every regiment should serve two years in the hills for every four in the plains. It is not intended that men should be kept idle. Evidence has been produced showing clearly the remarkable degree of health enjoyed by working parties, employed chiefly on road making in the mountains. Wherefore it is believed that additions to present barracks, and even new ones, might be mainly made by the men themselves with great advantage to their health, and this occupation would not interfere with their military employment during the winter. Every hill station might, in addition to accommodation for a regiment, provide for 150 invalids.

Invaliding sufferers from organic disease to England in the first instance, instead of sending them to gain but little in the hills, prior in so many cases to final removal to England, together with the proposed rotation system of all regiments to the hills, would render such provision for weakly men sufficient, and obviate the expense of separate establishments.

The Commission do not fail to recognise a difficulty regarding this provision for drafts on arrival from England, but would suggest as far as practicable the same principle being adopted as for regiments on first arrival in the country.

QUESTION.

"Should not arrangements be made for sending sickly men at once to the hills during the hot and rainy seasons?"

REPLY.

The Royal Sanitary Commission's Report very wisely remarks:—"As regards disease, the mountains of India are but partially curative." Moreover, it is more than doubtful that a move from a distance to the hills, even by rail, in the hot weather, would benefit a man seriously ill. Such moves should be undertaken with extreme caution. A sudden change to the cold and damp of the hills of a sufferer from acute or sub-acute disease of the liver or bowels would be a hazardous procedure; whether justifiable in individual cases it is difficult to say, but as a general practice it does not seem a safe expedient.

Sufferers from certain forms of disease at stations close to the hills might no doubt often be removed to the hills with advantage.

Scientific Inquiry into Cholera.

QUESTION.

"With reference to the scientific branch of the cholera inquiry in India, would it not be desirable to supplement the instructions drawn up by the Army Sanitary Commission by a few suggestions as to the best method of conducting and carrying out the inquiry? And would it not be important to connect Drs. Lewis and Cunningham, either directly or indirectly, with the Home Authorities, so that any difficulties occurring in the course of their investigation might be promptly met, and scientific details communicated early?"

REPLY.

The Commission in their instructions for the Indian cholera inquiry, and in the accompanying memorandum, expressed their opinion that the details of the inquiry should be left to the authorities in India. They merely stated generally in what manner the reports should be transmitted from observers in India to the Indian Government, and thence to the India Office at home.

The present question refers specially to the scientific portion of the investigation, and the manner of reporting and checking the results.

While giving the following reply to the points in the question, the Commission must be understood as abstaining from all dictation in the matter. Their object is simply to afford to the authorities in India the means of arriving at such an arrangement regarding the work as may facilitate its execution.

Section No. VI. of the instructions (special local inquiry) is subdivided under the following heads:—

1. Microscopic examination of the external atmosphere.
2. Examination of soils.
3. Microscopic examination of water.
4. Microscopic examination of articles of food.
5. Microscopic examination into the pathology of cholera.
6. Microscopic and physiological inquiry into the cause of cholera.

Each of these heads contains two distinct sets of investigations intended to check each other. One has reference to the normal condition of the objects submitted to examination at times and places where cholera is absent, and the other at times and places where cholera is present in varying degrees of intensity.

To conduct inquiries on these points necessitates an organised direction and procedure. They would be very inefficiently carried out unless some general plan were laid down and acted on. One of the objects in sending two trained officers to India for the purposes

QUESTIONS. REPLIES.

of the investigation was, that instead of trusting to desultory observations made by medical officers, most of whose time is already more or less occupied with other work, two specially trained observers kept constantly on this service would acquire increasing facility and experience in dealing with its objects, so that in due time all the light which modern scientific methods could throw on the subjects of investigation might be obtained and rendered available for public purposes.

The whole inquiry is so framed that theory or hypothesis are no parts of it. There is nothing wanted from it at present but carefully observed facts, in the hope that these facts will in time range themselves under general laws indicating the means of saving life.

With this view each section of the inquiry throughout the instructions contains points depending for their elucidation more or less on the scientific data to be acquired under Sections VI. and VII. The questions are so arranged that the replies will check each other, so that fresh investigations may be directed to clear up any doubtful points when requisite.

The fundamental condition therefore of the entire procedure is that the instructions should be taken as a whole and complied with as far as practicable.

Copies of them should be put into the hands of every officer engaged in any branch of the inquiry, with a request that in replying to, or giving information on any question or questions, he should attend to the precautions indicated for avoiding errors in observation, and reply as closely as possible in the terms of the questions. Facts may present themselves, regarding which, other and more special questions may have to be asked, but such questions will suggest themselves when the occasion arises.

The Commission, considering it of great importance that some arrangement should be come to for ensuring a systematic direction of the inquiry, and for reporting the results, would suggest that there should be some officer or committee appointed to select localities at which it would be advisable to place the trained observers, and to make the necessary arrangements for conducting observations under the instructions.

It is a matter of obvious necessity that, as a rule, the observers should not be taken away from any locality at which they may have been placed, or from any inquiry they may have entered on, until they have completed their work there.

The Commission would suggest that the ordinary every-day work of the scientific observers should be directed towards obtaining normal constants of healthy localities. It is quite as important to obtain a true picture of the natural condition of healthy air, soils, waters, articles of food, organised structures, post-mortem appearances, &c., when there is no cholera, as it is to obtain a picture of the same objects during a cholera epidemic.

A similar remark applies with equal force to inquiries into the same class of facts in localities where cholera is always absent, and in localities where it is always endemic.

One advantage of this procedure would be that when cholera was about to invade any locality in which the observer happened to be at work at the time, he might have the opportunity of watching any changes in the objects under daily observation.

The observers could always be transferred to localities where cholera had broken out, there to conduct special observations called for by the appearance of the disease. But in all changes of the field or of the subjects of observation, the observers themselves should be consulted.

Reports might be called for on any part of the instructions at stated times; or special inquiries and reports on any section or portion of a section of the instructions, or specific replies to specific questions contained in the instructions, might be called for.

For example, reports with drawings might be furnished by the two scientific observers on each division of their section in localities where cholera is absent, and again where it is present.

It is most important also that reports and illustrative drawings should be printed as soon as possible after being laid before the Government of India.

No attempt should be made to report on the results of the inquiry until a sufficient number of facts and a sufficiency of experience has

QUESTIONS. REPLIES.

been accumulated and printed to enable all persons interested in the subject to form their own opinions.

Copies of these printed reports should be sent to the India Office at home as soon as practicable.

If deemed to be desirable by the authorities in India, the Army Sanitary Commission would willingly place itself in direct communication with any officer or committee appointed to direct the inquiries in India, or with the observers themselves, so that any difficulties met with by the observers, and any points or questions regarding improved methods of inquiry or as to the precise nature of objects discovered under the microscope might be promptly dealt with.

J. HOPE GRANT, Q.M.G., and President.
DOUGLAS GALTON.
JOHN SUTHERLAND.
H. H. MASSY.
T. A. L. MURRAY.
W. E. BAKER.
J. R. MARTIN.
ROBERT RAWLINSON.

J. J. FREDERICK, Secretary,
Army Sanitary Commission, War Office,
July 8th, 1870.

APPENDIX.

REPLIES to QUERIES from the ARMY SANITARY COMMISSION regarding Regimental Arrangements in India, by the Director General of the Army Medical Department.

I cannot, I think, better reply to the queries put to me by the Army Sanitary Commission than by forwarding a letter from Inspector-General Dr. Muir, at present Principal Medical Officer of H.M. British Troops in India, and extracts from a letter forwarded to me by Inspector-General Dr. Beatson, *late* Principal Medical Officer, British Troops in India. I may say I quite concur with both these officers generally in their views, both on account of the soundness of the principles they inculcate, and from the fact that the position that one of them now fills, and the other did lately fill, gives them an unparalleled practical experience which is enhanced by the well-known clear judgment of both of them. Without entering into the queries in detail, I will only offer a few general remarks, as I think Dr. Beatson's and Dr. Muir's communications include nearly everything needed.

Composition of regiments for India.

1. I beg to attach a statistical table showing the mortality of European soldiers at different ages in India; but, as Dr. Beatson remarks, it indicates the effects of climate from length of service in India, not really by age. I may add that I have received lately from numerous medical officers in India, reports deprecating the sending out to India young and delicate soldiers. The 92nd Highlanders suffered from typhoid fever soon after reaching India, and Deputy Inspector-General Munro largely attributes it to the immature age of the large proportion of the men amongst whom it chiefly prevailed. A similar complaint is made regarding the 21st Fusiliers, by a board which reported upon the great prevalence of malarious fever in the regiment while at Kurrachee; and Deputy Inspector-General Menzies makes a very decided statement to this effect as regards the 62nd regiment stationed at Lucknow, which suffered much from sickness, including cholera. These are only a few instances amongst many. I am fully of opinion soldiers should not embark for service in India under 20 years of age, and that even immature men of 20 should be held over for still longer.

Arrangements for arrival in India at proper season.

2. This has been very pertinently replied to by Dr. Beatson, and from November to January is no doubt the best season for troops to reach India. If, however, a certain force is to be moved in a limited time by a limited number of transports, there seems very little scope for arrangement. The general principle would be to send out the troops for the most distant and least accessible stations first, and to locate those arriving latest in healthy stations close and accessible to the port of disembarkation. Were Dr. Muir and Dr. Beatson's propositions, to send all regiments on first arrival in India to the hills, carried out, there would be no difficulty in the matter; but, until the provision of these stations is made somewhat as Dr. Beatson proposes, the arrangement cannot be carried out in its entirety, but so far as it can, in the meantime, it would be all important to introduce the principle, and locate as many of the European troops as possible in the mountain ranges; and the proposal that all regiments should spend their first two years of Indian service

in the hills, and the subsequent rotation of plain and hill service, is calculated to be of the very highest value in its health aspect to the European soldier. It is fairly deducible that, if the European soldier is placed in the hills where heat is not felt, and malaria reduced to a minimum, a considerable step towards assimilating his position to that to which he has been accustomed in his own country will be obtained. The great experience that a long series of years has afforded of the healthiness of the hill stations in the Bengal Presidency, from the residence there of civil and military servants of the State, shows that these localities would be very influential in preserving the health of Europeans reaching them in health. Though not the European's climate, they approach it, and, probably, in no indication is this more clearly evidenced than in the effects upon European children, who thrive wonderfully in some of the hills, presenting the ruddy healthy look of the most favoured regions of Europe. If the principle of sending regiments to hill stations on their first arrival in India were adopted, it is probable that, up to a late period, they might be conveyed by rail to within an easy distance of the Bengal hill stations. And arrangements might be made for the latest arrivals each season to reach Jakatala or Bangalore in the Madras Presidency from Bombay, viâ Beypoor, by water, and from thence by rail. I do not quite concur with Dr. Muir as to the plan he recommends of confining regiments to provinces or districts, as by such arrangement some regiments might be doomed to spend the time they occupy stations in the plains in exceptionally unhealthy climates. Thus, regiments in Lower Bengal, or portions of Central India, would be very badly placed in comparison with regiments serving in less malarious places.

It would seem more judicious to move them about, all taking their turn of the less healthy stations, but not proceeding from one to another unhealthy station. I am not in accord with Dr. Muir in his disapproval of marching troops in the cold season. It is no doubt attended with expense, but the experience derived from campaigning in India clearly points to great advantage to the health of the men from the exercise, and change of scene and air, and of modo of life, which are associated with marching in the cold weather.

Period for selection of invalids in India, and proper season of arrival in England.

3. The proposal of Dr. Beatson on this head is deserving of careful consideration. Some time ago I brought the matter to the notice of the Principal Medical Officer in India. The "Crocodile" arrived on 12th January last, and the great mortality amongst sickly men from India on her passage home, and after the men reached this country, very forcibly impressed this subject upon me. There is no doubt that men who are in debilitated health, or the subjects of many forms of organic disease, the result of service in India are very liable to have their condition greatly aggravated by arriving in this country in the winter.

It might be possible to arrange one other passage homewards annually by the overland troop ships for invalids.

When invalids are sent home in the winter by overland route, the hospital at Suez should be used to the extent of its accommodation for such cases as would be likely to suffer by reaching England during the winter.

4. My remarks upon this query are included under No. 2.

Hill stations. 5. I have nothing to add to the observations of Dr. Beatson on this question.

6th May 1870.

T. G. Logan,
Director General,
Army Medical Department.

Army Medical Department.

Abstract showing the Ages of the Troops serving in Bengal, Madras, and Bombay, and the Deaths at each Age, during the Year 1868, &c.

Station.	Under 20.		20 and under 25.		25 and under 30.		30 and under 35.		35 and under 40.		40 and upwards.	
	Strength on 1st Jan.	Died.	Strength on 1st Jan.	Died.	Strength on 1st Jan.	Died.	Strength on 1st Jan.	Died.	Strength on 1st Jan.	Died.	Strength on 1st Jan.	Died.
Bengal - -	1,493	22	8,123	132	12,019	200	6,267	181	2,011	82	362	19
Madras - -	317	4	2,253	18	3,896	92	1,881	74	595	24	113	8
Bombay - -	448	3	1,988	30	2,775	27	2,030	47	671	20	90	5
Total -	2,258	29	12,364	180	18,690	319	10,178	302	3,277	126	565	32
Ratio of deaths per 1,000 of strength	12·84		14·56		17·07		29·67		38·45		56·64	
Ratio of deaths per 1,000 of strength in Bengal, 1862–66, Madras and Bombay, 1861–66	7·68		16·11		24·64		32·18		41·94		56·01	

Medical Department, British Troops, Inspector General's Office,
Calcutta, 31st December 1869.

SIR,

IN continuation of previous correspondence, I have the honour to offer the following observations for the consideration of His Excellency the Governor-General in Council.

In these days of retrenchment it will, I think, be readily conceded that no economy is more real and vital than that which reduces the sick rate of the British force serving in this country.

A sick soldier is an expensive article. He requires medicines and medical comforts to be provided for him; doctors and medical establishments to be kept up for him; hill sanitaria to be maintained for his convalescence, and costly transports for his removal to England when such becomes necessary.

The following suggestions are submitted in the belief that, if acted upon, economy in the saving of life and health (to take no higher view) will result.

Young soldiers.

I. One pregnant cause of the high ratio of sickness and mortality among the European troops in this country is the large number of boys or growing lads who sent out to fill its ranks.

To take, in illustration of this statement, four regiments out of those which arrived last year, the following table will show that nearly one-fourth of the aggregate numbers consisted of lads under 20 years of age:—

Regiments.	No. under 20 years of Age.	No. of Recruits not yet discharged Drill.
92nd	239	116
1/6th	165	13
85th	155	96
2/60th	163	9

Now, it is a fact, substantiated by all experience, military and medical, that soldiers of immature age and development do not thrive when transplanted to the plains of India. Of what avail are our expensive new barracks, our advanced sanitation, and all the means and appliances so liberally provided by Government for the preservation of the health of the European soldier, if so large a proportion consists of such delicate material. If, as I understand, the Government of India is charged with the maintenance of the Indian depôts in England, surely it has a right to demand that no soldier be embarked for service in India who has not completed 20 years of age.

There is another point connected with this head also worthy of attention; viz., the return of invalided soldiers to India before they have had time completely to recover their health by the change to England. Of this we have very recently had an instance in the case of several men of the 26th Regiment who were sent home a year ago, returned to India in October last, and are about to go back again to England during the present or next month as invalids. Although this point has been taken up and pressed by the Medical Department, it would seem that the authoritative interposition of the Government of India is still wanted to ensure a stop being put to a practice so short-sighted and wasteful of public money.

Mode of relief.

II. Is the mode in which European regiments are brought into this country, and afterwards moved from station to station in the course of reliefs, that most consistent with considerations of health and economy?

Putting aside for the present the military and political aspects of the question, let us see what is the ordinary routine in these movements.

A regiment arrives at Calcutta from England, and is sent up to some station in the North-west, or Punjaub, as Agra, Meerut, or Lucknow, and thence works its way up to Peshawur, whence it is moved to Central India or Bengal; or it arrives at Bombay, is despatched to the Punjaub, moves eventually to Peshawur, thence down to the North-west or Oudh, or perhaps to a hill station, and thence to Central India.

To give examples:—

90th Light Infantry.
7th Fusiliers.
93rd Highlanders.

1. The regiments named in the margin moved from Calcutta to a station in Oudh, thence to Allahabad, Agra, Meean Meer, and Peshawur, from Peshawur to the hills, and thence to Central India.

52nd Regiment.
72nd Regiment.
Rifle Brigade.

2. Again, others from Peshawur have moved to an intermediate station in the Punjaub and then to Central India; others from Central India to hill stations, then to Peshawur, and thence back again to Central India or Bengal.

Now it does not fall within my province to discuss the mooted point as to whether periodical displays of our strength are necessary to the conservation of our prestige in the native mind, nor to do more than point out, *en passant*, the enormous expense which must be caused by thus moving regiments from Dan to Beersheba.

I confine myself to the medical phase of the question, and proceed to enquire if there is any risk to health involved in the system of rotation sketched above?

I think most medical officers, if canvassed, would reply that these moves, involving often abrupt changes of climate, were trying and not unfrequently injurious to the health of the regiments. But there is one point on which no doubt whatever exists. It is the fatal effects sure to follow from moving a corps from one malarious district to another. Regiments that have served in stations in Bengal, or in Allahabad, Agra, and Meean Meer, are unfit for service in the

Peshawur valley, and are invariably prostrated by malarial influences there, from which I believe none ever recover during the remainder of their service in India, even after a residence of 12 or 18 months at a hill station, and never, certainly, if sent to a station in the plains, where malarial influences are more marked than in others.

To send regiments tainted with and not perfectly recovered from malarial influences to another malarious district is, I repeat, a mistake, so far as the regiments are concerned, and sure to prove an expensive mistake to the State. It requires years to get rid of malarial taint; and even when the constitution appears to have recovered, the least re-exposure to malarious influence will again produce disease. No man who has once suffered from ague in India ever *completely* shakes it off, until he quits India for a time.

Again, I consider it a mistake to send regiments that have served six or seven years in the plains direct to Peshawur, because the constitutions of the men more or less exhausted, are unable to withstand the pernicious climate of the valley. Before proceeding to Peshawur, such regiments should, in my opinion, pass two years in the hills, and after having completed their period of service in Peshawur should again be sent to the hills.

The 93rd was sent to Peshawur after six years' service in the plains, was there prostrated by epidemic cholera and ague, from which latter it did not recover for two years. In the beginning of 1867 it was sent to Jhansee and Sepree, and during last year ague again appeared in nearly all the men who had suffered from it in Peshawur and Sealkote.

Again, the 104th Regiment suffered much in 1865–6 from ague in the same stations. It proceeded to Dugshai in 1867, where cases of ague were frequent, and last cool season to Peshawur, where in the autumn it was struck by epidemic cholera, and suffered severely.

Bengal Proper, Jubbulpore, Jhansi, Seepree, Morar, Benares, Allahabad, Cawnpore, Agra, Meean Meer, Peshawur.

The whole plain of India is more or less malarial, but the stations marginally noted are decidedly the most unhealthy, as shown by the frequent, nay constant prevalence of cholera, remittent and intermittent fevers.

It may be laid down as an axiom, therefore, that no regiment should be sent from one malarial district *immediately* to another; *a fortiori*, that no regiment which has suffered much in a malarious district be sent to another malarial district, even should it have been at an intermediate healthy station for one year or even eighteen months.

Without presuming to examine too critically the system of relief as it has obtained of late years, enough, it is believed, has been adduced to show that, so far as medical reasons go, it has not always been carried out in accordance with their dictates, as evolved by experience.

Whether in the rotation of stations any fixed plan has been, as a rule, pursued, or all has been haphazard, favour or caprice, I shall not undertake to say. Of late years I can aver that the sickly state of a regiment has been its surest passport to a healthy or a hill station, or a working party in the hills, but it does not appear that this principle has been always acted upon in the selection of corps for these envied locations.

In a word, the system, if system it can be called, does not seem, whatever military merits it may have had to recommend it, to have been that most consonant with sanitary considerations. Can a better be substituted?

NOTE.—Within the last 11 years, regiments are known to have been *twice* sent to hill stations. Others have never been in a hill station at all.

The 101st has three times had the benefit of a hill station in 12 years.

The 104th twice in the same period.

Other regiments (7th, for example) have always been in so-called unhealthy stations.

With a view to solve this question, I had the statistics of sundry British regiments examined, their medical history carefully traced in connection with the several stations to which they successively passed, and had hoped to have evolved some data on which to base a sound system of relief or rotation; but the evidence, when collected and compared, proved so conflicting, on account of the very different conditions under which the regiments in question came to be reviewed *aupres* previous and present state of health, length of service in India, &c., that the attempt was abandoned as impracticable.

The following, however, is a proposal which will obviate many of the difficulties connected with this subject, and, if carried out, will, I am sanguine enough to believe, be attended with great saving of life and money:—

1. I propose that all regiments coming to India should be sent to serve in particular provinces, the Punjab, N.W., Central India, Bengal; and that they should not leave these provinces under ordinary circumstances during their stay in India.

2. That each regiment should have a hill station in connection with the one in the plains, for which the Himalaya and Rajmahal range offer every facility in Bengal, while the Neilgherries, Mahabeleswar, and other hill sites are equally available for the requirements of Madras and Bombay respectively.

3. That, so far as practicable, a regiment on arrival in India should be sent to a hill station at a high altitude for two years, where it should hut itself, have no regimental establishment allowed except sweepers, and should do everything for itself as in England.

After two years' service in the hills, the regiment should be brought down to the plains, remain two years at the station of its appointed district, during which time the regular establishment of servants should be supplied to it. The next two years again should be passed in the hills, but at a lower altitude, and all servants, except sweepers, again withdrawn. The fourth period of two years should be spent on the plains; and the fifth period of two years (which should be the last in India) should be on the hills, but at a lower altitude; and from thence it might go direct to England at any season of the year.

In this way regiments would serve ten years in India; six of which would be in the hills, and four on the plains.

I am quite aware that this plan pre-supposes a redistribution of the army, and an allotment to hill stations of a much larger proportion of the European force than obtains at present.

This is so vital a question as affecting the health of the army in India generally, and involves so directly the feasibility of the scheme which I have proposed, that it seems desirable to consider it a little more in detail.

Supposing then that the troops were permitted to hut themselves in suitable localities in the hills, as suggested, the question comes up, could any and what numbers now in garrison in the plains be withdrawn therefrom without jeopardizing our hold on the country?

On this head, I am aware statesmen and commanders of great Indian eminence differ; some maintaining that one half of our force might safely be located in the hills, while others hold that any reduction of the present numbers in garrison in the plains would be the signal for *emeutes* among the more turbulent population of India, to suppress which our troops would be constantly descending from the hills.

I am not aware to which side of this question the present Government inclines, but the fearful ravages of cholera during the past year embolden me to bring this subject under the consideration of Government as one, if not the most serious that can engage its attention. If the extension of railways to the foot of the hills, the formation of entrenched camps or forts at the larger stations in the plains, or other means and improvements which military men are only competent to deal with and devise, could accomplish the consummation desired, no time, I respectfully submit, should be lost in carrying these works into execution. All our efforts to stay the ravages of cholera have hitherto been fruitless. These ravages appear on each successive outbreak to be on the increase, both as to frequency and virulence; and, in the present state of our knowledge, our only safety consists in the withdrawal of as many of our troops as possible to hill stations. Here, although cholera is not unknown, it is an acknowledged fact that its visitations are comparatively unfrequent, and its force shorn of much of its virulence. The present lamentable state of the 58th Regiment and the recent fearful tragedy at Peshawur call aloud, I respectfully submit, for inquiry into a policy which condemns so many victims to a premature death, with a view to the possibility of its modification or reversal. Public opinion, and the difficulty of keeping up a supply of recruits, will, if I mistake not, sooner or later, force this whole subject on the attention of Parliament.

One further remark I would venture under the present head:

It is during the first and second years of service in the plains of India that regiments are most sickly, and the mortality during these years is often greater than that during the whole of their remaining service in India, epidemic disease excepted. This is a very significant fact, and one which does not seem to have received that recognition which its importance demands. It points to the expediency of all newly arrived regiments and drafts passing their two first years of service in the hills so far as is practicable, whatever be the system adopted with regard to their after movements.

Another point is deserving of a passing remark. Why should regiments sent to the hills not hut themselves instead of being accommodated in expensive permanent barracks, which are there quite out of place? I have reason to know that under proper engineer supervision they could perfectly well do so, and they should have nothing but *tentes d'abri* allowed them until they do so.

Apart from the saving to Government by utilizing soldier labour (the value of which is only now beginning to be recognized) the practice as a training for active service and as a source of recreation cannot be over-rated. The employment of soldier labour, so conspicuously successful in road-making in the hills, falls yet far short of the point to which it should be carried.

Vide Horse Guards' recent Order.

To sum up. The following benefits appear derivable from the above proposals:

Regiments would pass half their period of service in a comparatively good climate. Invaliding would be reduced; mortality diminished. Regiments would be kept in a more efficient condition, and the State saved enormous expense.

To march regiments from Peshawur to Sangor, from Sealkote to Jhansie, from Jhansie to Dugshai, and from Subathoo to Kamptee, must cost lacs of rupees.

Allotting regiments to provinces, and moving them only within this Province, from hills to plains, and *vice versâ*, would save health, wealth, and life.

These remarks, it is hardly necessary to add, refer only to times of peace. Military must always over-ride all sanitary considerations.

Convalescent Depôts.

III. Do Convalescent Depôts pay? or, in other words, does the Government receive an equivalent for the expense of their maintenance?

It is the opinion of some of the most experienced executive and administrative medical officers who have given attention to the subject, that the benefits accruing from these establishments are not equal to their expense.

With this verdict I am very much disposed to concur. Soldiers who once go to a hill depôt frequently either have to be invalided from the depôt, or return the following year to the hills; or are invalided from their regiments. I have known men to be sent three years in succession to hill depôts (a practice which I have latterly taken steps to abate), and at last invalided to England. In truth, once a man goes as an invalid to a sanatorium, he is too apt to consider himself, and to be regarded by his comrades, as a confirmed valetudinarian, from whom "a good day's work for a good day's pay" is not henceforward to be expected; and so he eventually drifts to Netley. With the view of ascertaining what proportion of men who have passed a season at a hill depôt eventually become fit for duty in the plains, and remain so, I have lately circulated among medical officers a series of queries, but the replies which these have elicited are not so positive and comprehensive as to warrant reliable deductions being drawn from them. In fact, the statistics of hill depôts seem to have been kept up in a very loose and perfunctory manner; a practice which will not be so henceforward. These inquiries will be further prosecuted; and, if I find grounds sufficient to justify the steps, I will take the liberty of submitting to Government the expediency of doing away with these depôts, and appropriating the existing buildings to regiments or wings of regiments.

If my suggestion of sending regiments to hill stations every alternate two years were adopted convalescent depôts would no longer be required, and thus, besides the saving in money and life by the rotation system of hill service, and restriction of regiments to provinces, there would be a further large saving effected, by sending invalids at once to England, instead of in the first instance to hill depôts, to which a commandant, station staff officer, sergeant majors, quarter-master-sergeants, &c. &c., are appointed and paid extra, to say nothing of the medical officers and native hospital establishments, all of which might then be dispensed with. If a soldier required a change to the hills he could have a furlough, or be attached for a time to a regiment serving there.

These hints are thrown out in the hope that the subject may attract the notice of Government, and perhaps call forth some decided action in order to determine the usefulness of these establishments or otherwise. In weighing the advantages to be anticipated from a residence in the hills, it should never be forgotten that the balance of medical opinion is *against* the hills as *curative* means or agencies. Their real value consists in *keeping men well* whose constitutions are yet unbroken.

The New Standard Barracks.

IV. A reaction, arising out of what it is the fashion to call the "financial crisis," has lately arisen against these permanent barracks, chiefly owing to their costly character, and their not having fulfilled all the expectations that were formed of them, which there is some risk of being carried beyond due limits, with the effect of undervaluing structures that are far superior to anything of the kind that has gone before them, and which must be regarded as an inestimable boon conferred on the British soldier doomed to service in the plains of India. That they are not perfect, that they are hot and in some respects uncomfortable, that less expensive structures would equally well have fulfilled the required conditions of a healthy barrack, are truths that cannot be gainsaid; but to aver, from what took place at Allahabad and Peshawur during the recent cholera epidemic, that they are no better, but worse, than the old-fashioned structures which they superseded, in regard to warding off the inroads of cholera, is not a fair statement, but a perversion of the facts; for, as regards Allahabad, it is well known that the men of the 58th Regiment were cholera-tainted before they entered them, and that the surroundings of the buildings, when taken into occupancy, were in anything but a satisfactory sanitary condition. The same exculpatory plea might easily be set up in regard to those at Peshawur, if necessary. In fact, none of these barracks have yet been occupied sufficiently long to warrant a fair judgment being formed of them.

That the men should prefer the upper story, where they can lounge on their beds and smoke their pipes, to the recreation room, where they are confined to a narrow form as a seat, is intelligible enough to all who know the habits of soldiers in India. It was, however, undoubtedly a great mistake to adopt one uniform standard for conditions of locality and climate so varied and opposite as the cantonments in the plains and hills of India exhibit.

In the swampy malarial cantonments of Bengal Proper, two-storied buildings were indispensable; but in the drier climate and soil of the Punjab and upper provinces, the same amount of raising the occupants from the ground was not necessary, and a one-storied edifice elevated on a plinth four or five feet high, would have answered every purpose and saved a large part of the total outlay.

That these two-storied barracks have been found unexpectedly hot might have been almost predicted from their extensive wall surface, height, nature of roof, and in some cases their position; but happily some of these defects are remediable. The double or Jubbulpore roof must be supplied where wanted, and can be so, I understand, at small expense. The open verandahs, against which the sun beats, must be protected by large sunshades or jalousies; and in the Punjab and all dry up-country stations, the lower story can be safely used as dormitories (the men dining in the verandahs), and thus much of the odium attaching to these structures will be done away with.

As to their erection, *pur et simple* at hill stations, nothing can justify so wasteful an expenditure of public money; such extravagance is simply sinful.

The decision which the Government will come to on a review of the whole subject will be, I trust, that no more of these expensive structures shall be built.

The kind of barrack that is wanted for the greater part of the plains, save Lower Bengal, is an inexpensive building of sun-dried bricks, with a sunproof roof, and provided with the other necessary conditions of space, reasonable segregation, and efficient drainage. Such structures, in the event of any locality becoming frequently unhealthy, could be thrown down and erected elsewhere, the materials being used a second time.

One drawback to these standard barracks is that they tie us down to a locality which it may be found desirable on grounds of health to abandon.

On the whole, then, let us be thankful for these so-called "palatial residences." They will be a standing monument of the benevolence of the Government which called them into existence, and before many years will amply repay, in the improved health of the British soldiery, the sums that have been expended upon them, even should these have been larger than what was absolutely required.

I have, &c.
(Signed) W. M. Muir,
Inspector General of Hospitals,
and P.M.O. British Troops.

The Secretary to the Government of India,
Military Department, Calcutta.

Remarks by Inspector-General Dr. Beatson on Regimental Arrangements in India.

Query.

1. What should be the composition of regiments sent to India, to avoid the losses consequent on allowing unsuitable men to go there?

1. I believe that one cause (and not an inconsiderable one) of the mortality in regiments in India, particularly in regiments newly arrived in the country, has its origin in the immature age at which many of the men are sent out to India.

2. It is true that, at first sight, statistics do not appear to bear out the idea that the death rate is greater among this class than among those more advanced; in fact mere figures seem to prove quite the contrary, that is, the per-centage of deaths will at any time appear to be considerably increased during each quinquennial period of life.

3. If figures go to show this result, how can it be established that the mortality is really greater, although apparently less, among those who go to India as boys than it is among those who arrive in the country at a more mature age? I think the fact which is generally believed and accepted might probably be proved by figures in this way, viz., by carefully comparing the statistics according to age among men (up to 35) who have been the *same length of time in India*, for it is this latter element that, in my opinion, goes considerably to swell the mortality with each advancing period in life.

4. Then, again, the larger proportion of lads under 20 may not have arrived in India till they were 19, and thus, although their health may suffer, they may not actually succumb during their first year of service, but during a subsequent one, and so increase the death rate from 20 to 25.

5. Of course I am quite well aware that in times gone by many (I do not think there are many now) entertained the idea that men become inured to the climate of India, and that the more complete the process of so-called acclimatization, the more safe the life of the individual, and the more safely could such an individual undergo exposure and hard work in an Indian climate. All statistics, however, (analyse them as we will) prove this to be a mistake, and clearly show that with advancing age, and it may be presumed, as a rule, with proportionally longer Indian service, the mortality among men, say from 30 to 40, is twice as great as it is among men from 20 to 25.

6. Residence in the plains of India involves, and, in nine cases out of ten, is inseparable from, deterioration from the standard of health in the European constitution; and when I have heard, in disproof of this opinion, an allusion to the hale old European pensioners formerly located at different circles in the plains of India, I could not help asking myself the question, "How many dead men do each of these living ones represent?"

7. The above consideration is to my mind a complete answer to those who would urge the expediency of again reverting to a local European force for India; such a change would be a retrogression; in fact, an impracticable one, inasmuch as the circumstances of military service have of late years greatly changed, and are still changing, under the improved and improving conditions of enlistment, all which improved conditions must be equally applied to every soldier of Her Majesty, whether he elects to serve Her Majesty in Her Indian possessions or elsewhere.

8. The first element of localization was the acceptance, on the part of the recruit, of the condition of *long* and *continuous* service in India; this element, however, is at once disturbed by the limitation of every man's period of enlistment (for the infantry) to ten years, to be, I doubt not, yet further considerably reduced, at all events as regards foreign service.

9. It is, therefore, useless to consider whether or not continued residence in India secures immunity from disease; but altogether apart from the theory of acclimatization, every one of Indian, or in fact of any tropical experience will, I think, allow that for the first year or two of service in the tropics every man requires to be more careful of his mode of life, inasmuch as he is undoubtedly more susceptible during the above period to attacks of acute disease; on which account it is highly desirable that his constitution should be *fined* down from the robust plethora of English health in a climate which would produce this change, without at the same time causing deterioration of constitution.

10. This object could, I conceive, be easily attained if it were understood that in all ordinary circumstances, that is in all quiet

times, every newly-arrived regiment should occupy for the first two years of its Indian service a hill station.

11. If this can be accomplished, and a rule enforced that no lads should leave England for India until they have completed at least their 20th year, I would feel hopeful that the mortality in newly-arrived regiments would be greatly diminished.

QUERY.

2. What arrangements could be made to ensure the arrival of troops in India at the proper season?

1. This second question is not very easily answered. If the question simply were, what is the proper season for troops, fresh from England, to arrive in India, an answer could easily enough be given; but to say *what arrangements can be made* to ensure the arrival of troops at proper seasons is a much longer question; in fact, all that can be said is, that it is entirely a question of the number of regiments and of details which have in any year to be sent to India, and the amount of the means of transport at command.

It may be safely said that it is most desirable on sanitary grounds that all the arrivals should take place before the 1st of January in each year; and to this it may unhesitatingly be replied, that with existing means of transport, and with the present number of men to be sent out annually, their being all in India before 1st January is simply an impossibility; for while it is desirable that all should arrive before the beginning of the year, it is equally desirable that none should go down the Red Sea before the middle of October.

2. Those conditions could of course be met by sending one half of the troops under order for India viâ the Cape, leaving England the beginning of September; but independent of other considerations, this would of necessity largely increase the expense of the relief.

QUERY.

3. Also the departure of invalids from India, so as to ensure their arrival at the proper season in England? and their selection in the most favourable time in India? The present system is faulty on both heads.

1. My opinion is, that men who are to come home viâ Egypt should not as a rule arrive in England before April; in other words, should not leave India before the middle of March, or anyhow not before the beginning of that month; and further, that the Invaliding Committees in India should not sit before the end of December or early in January. It is an extremely difficult matter to get old-established rules and routine altered in India. These Invaliding Committees have sat for, I daresay, nearly half a century in October, and their assembling at that time is looked upon as one of the institutions of the country; but the India of the present day is not the India of fifty years ago, in fact is not the India of ten years ago, a fact which willingly or unwillingly must be accepted, and must always be kept in mind.

2. When October was the month fixed upon for the assembling of the Committees to examine and report on men brought forward for change of climate, the reasons for fixing on that month were good and valid ones. In the first place, after the men had been passed, all their papers, military or medical, had to be prepared or completed (this of course has to be done still), and it might fairly be presumed that the preparation of these documents would occupy at least three, or perhaps four weeks. After the completion of their papers, the men had to be despatched by ordinary route marches, or by boats to the Presidency, where it was desirable to have them available for embarkation in all January, so that they might arrive in England about the end of April or the beginning of May.

3. How changed is all this now? And how much greater will the change be when the Grand Trunk Railway system, now rapidly advancing towards completion, is finished? No man will then be many days distance from port of embarkation, and the time which it will take to get him there can be calculated exactly. There can therefore be no objection if the invalid and weakly men are not, as a rule, to be embarked till the beginning of March to not bringing them before Invaliding Committees till January. One thing is quite certain, and of this I am every day more convinced by my experience in invaliding men at Netley, that many men are sent home needlessly from India; not from any carelessness or neglect on the part of the Invaliding Committees, but simply from the fact that many men, worn down by the heat during the summer months, look so ill at the end of the hot season as to justify the belief that they really require a change. After three months of the cold season in the Punjab or N.W. Provinces, the same men would scarcely be recognised as the same individuals, but they *have been passed*, and *therefore* must go home.

4. The advisability of deferring the assembling of Invalid Committees till January was brought forward by Surgeon Furlong, 6th Dragoon Guards, through His Excellency Sir Robert Napier (now Lord Napier of Magdala), then Commanding-in-Chief at Bombay, in the summer of 1867, and when referred to me, I recommended the suggestion of Surgeon Furlong as well worthy of attention. I left India soon after, so I am not aware if any further consideration has been given to the subject.

5. Another painful fact has (during the past spring especially) been made evident at Netley, and that is, that many of the men invalided on account of tropical disease, especially dysentery, have had their symptoms greatly aggravated by the sudden change of temperature on this side of Egypt, and have suffered all the more on account of an insufficiency of warm, especially under-flannel, clothing, which all men who are at all weakly, in fact all invalids, should have issued out to them on embarking at Alexandria; this flannel underclothing should invariably include drawers as well as a flannel Banian with sleeves.

5. It is almost needless to say that patients labouring under consumptive disease, or tendency thereto, have also suffered severely from the sudden changes of temperature; indeed the results were so serious among the invalids by a late ship (the "Crocodile"), and the deaths from pneumonia on board ship, at Netley, and in hospital at Portsmouth were so numerous, that the subject was brought to the notice of the Director General, Army Medical Department.

6. A man must be strong and sound to bear such sudden change and diminution of temperature as he must be subjected to, in leaving the mild weather of a tropical winter at Bombay, to be in little less than a fortnight in the cold winter of more northern latitudes; indeed, considering that there is now a hospital establishment at Suez, my opinion is that the Invaliding Committees should distinctly report whether the invalid should proceed direct to England, or remain at Suez till the severe cold of spring is over.

7. It might be, however, advisable not to restrict the authorities in India from sending home early, by almost the first ships of the season, any men (especially if at a convenient distance from the port of embarkation) whom it might be considered would be likely to derive benefit from an early removal from India.

QUERY.

4. As no general plan at present exists for locating troops at suitable stations on their first arrival in India, and for a tour of duty thereafter, so as to render their service in the country as little hurtful as practicable, would it not be advisable specially to consider the subject, and to lay down some special practical plan to be carried out so far as the exigencies of the service admit of?

1. I have already in some of the foregoing remarks, as well as on many previous occasions, in my official communications, while head of the Medical Department of H.M. British troops in India, answered this question; inasmuch as I have given my opinion that it will greatly conduce to the saving of health and life, as well as to the subsequent efficiency of the corps, if every regiment on arrival in India could spend the first two years of its service in the hills. To carry this out, however, several more hill stations would be required, over and above those which now exist or are in course of formation.

2. At present the hill stations, *not* including the small depôt station at Dhuramsalla (Bhagsoo), at which accommodation could be provided for entire regiments, are as follows:—

1. Darjeeling.
2. Nynee Tal.
3. Landour (to be vacated as soon as Chuckratu, near Pokri, is fit for occupation).
4. Kussowlie.
5. Dugshai.
6. Sabathoo.
7. Dalhousie (Baloon).
8. Murree.
9. Raneeket (not yet ready).

3. The latter is intended for a regiment, while at Chuckratu there will be accommodation for a regiment, and for a convalescent depôt. Dugshai and Sabathoo are also stations for regiments, and of late years there has been a wing of a regiment at Darjeeling; so that there will be four stations for regiments, and one, at which for some years past a wing has been accommodated. The remaining hill stations now in occupation, viz., Nynee Tal, Kussowlie, Landour, Dalhousie, Murree, and the small one at Bhagsoo, have been for many years occupied by details of convalescents; in other words, have been convalescent depôts, although they might, all except Bhagsoo, be made suitable for occupation by entire regiments.

4. The question then arises, and may now be considered, in what way can hill stations be most *beneficially* utilized? a subject on which directly contrary opinions and views are entertained, as can easily be discovered by reference to the opinions officially expressed, and the recommendations founded on such opinions, which have been submitted to the authorities in India; my own opinion, and my recommendations while I was head of the Medical Department of H.M. British forces in India, being, I may at once say, diametrically the opposite of the views entertained and of the recommendations submitted to Government of India by the late Sanitary Commission for Bengal.

5. My disagreement in the views of that Commission arose from no feeling of jealousy or of hostility, but solely from my belief that the views entertained by the President and by a majority (not by all) of the members were altogether wrong; and further that these views were not supported by facts, nor by the reasons assigned for having arrived at the conclusions which (in what was in some respects an able, or at all events a well-written, report) the Commission in the end of 1864 recommended the Government of India to accept as the basis for future arrangement in the matter of locating British soldiers in the hills.

6. A copy of that report is doubtless available to the War Office Sanitary Commission, the members of which can after perusal satisfy themselves whether or not I am in any way misrepresenting the opinions and recommendations of the Commission as embodied in their report. Of that report I have not myself a copy, so that I am speaking from my recollection of it, when (just five years ago) it was submitted to me for any remarks I had to make on the recommendations contained in it.

7. The report in question commenced with the enunciation of an opinion which is almost universally acknowledged to be a correct one; viz., that the hill climates of Northern India are more beneficial in the prevention than in the cure of tropical disease; and that an occasional sojourn in the hills is especially useful in warding off that general impairment of health almost invariably inseparable from lengthened residence in the plains of India. On this point the Commission and myself seemed to be quite agreed, while we differed altogether in the conclusions which we respectively deduced from the above acknowledged fact; my conclusion being, that if hill climates are chiefly beneficial (as they certainly are) in *preventing* disease, then men who are well, or at all events who are *not ill*, should be regularly sent to the mountains, to keep them up to the standard of health. The recommendation of the Commission, on the other hand, was to the effect that neither healthy men nor entire regiments should ever be sent to the hills, but that a sort of composite battalion of all the weakly and sickly men, excluding, of course, all cases of marked organic disease, should be formed for location in the hills; that is, that as long as a man is able to do his duty, although his health may be deteriorating all the time, *until, in fact, the one year more makes him too succumb*, he is to be kept grinding in the heat of the plains; while the weakly, the sickly and, let *me* add, the malingering and the lazy, are to have the enjoyment of a good climate and an easy life in the hills.

8. So far from my accepting the recommendation of the Sanitary Commission, that all the men sent to the hills should be selected cases of men whose health *was giving or had given way*, I would advocate quite a contrary arrangement, and would send periodically, and in their turn, entire regiments to hill stations, excluding merely the men who may be suffering from unmistakeable organic disease, all of whom had much better be at once invalided to England, as without such a change they are never likely to be really efficient soldiers in a tropical climate.

9. By thus giving men, *before they break down*, regular tours of the hills their health individually and as a regimental body may be, I conceive, greatly preserved, so as to enable them to get through their Indian tour of service with far less loss and inefficiency than at present take place.

10. What the tour of hill and plain service should be, as far as the *health* of regiments as a body is concerned, is a subject for mature consideration. My own opinion has always been that it should be *at least* two years in the hills for every four in the plains; this proportion of hill service I consider to be absolutely necessary, if it can be increased so much the better.

11. It is not for me to enter into the military or political aspect of the question of hill service for the British force in India, or to attempt to indicate what number of men can be so located with due regard to military and political contingencies, but one broad fact seems patent, that unless the present strength of British troops in India is to be viewed merely as a *peace* establishment, it must be allowed that we have a sufficient force to secure all the really important strategic positions, to hold military command of all the great centres of population, and at the same time to enable us to assume offensive military operations, if necessary, in the field. For this latter purpose one third, if not one half, of the British force would require to be available if need arose; and if it be so, why should not one third of the entire force in the country be, in peaceful times, available for location in the hills, at spots of sufficient elevation, but at the same time contiguous to the plains?

12. To carry out this system of relief, by which at least one third of the force could be accommodated in the hills, and by which each regiment would spend two years in the hills after every four in the plains, it would be necessary to have one hill station to every three regiments on the establishment. This would probably involve about three more stations than now exist or are being formed in Bengal, provided the invalid depôt system is abandoned and all the stations at which convalescent depôts now are be given over for regiments, and the accommodation at each completed up to the required extent.

13. At the several hill stations, if all are given over for regiments, there might be provided depôt accommodation for about 150 invalids at each, as from regiments in the plains there would probably be a limited number of men who would each year require temporary change to the hills. If, however, each regiment has its regular tour, *as a regiment*, of two years in the hills for every four in the plains, the number of men requiring change to the hills during their regimental tour of service in the plains should be much less than from regiments which often have, as at present, almost continuous service at hot and trying stations.

14. All the present convalescent depôt stations in the Punjab, except Bhagsoo, are quite well suited for the accommodation of entire regiments, provided the existing barrack accommodation were added to; although, as regards Kussowlie, and Dugshai also, the water supply, if not scanty, is very inconveniently situated, far down the hill. I have, however, always thought that a tank could be very easily formed, and a *large* body of water retained at the former station if the deep gorge (through which all the water drainage is effected) were dammed across by an artificial bund.

I have heard it said, that considerable difficulty in retaining water in the gorge, even if a dam were built, would arise from the porous nature of the soil, but if *puddled* with clay, that difficulty would be obviated to a considerable extent, and the water thus collected, although not fit for drinking and cooking purposes, would be quite suitable for those of bathing and ablution, purposes for which the greater portion of the water consumption is needed; a facility of supply for these purposes is therefore a matter of great moment.

15. The question is often put, would it not be desirable to have a certain number of stations which would possess what may be called an intermediate temperature, and with a more moderate rainfall than we have, at an elevation of 7,000 feet, on the front or southern ranges of the Himalayas? The answer to this is, Yes, it would be *very desirable* to have such stations, but where are we to find them in Northern India? I can only say that I have been a good deal over the front ranges of the Himalayas, and I have found no such localities, if we except Sabathoo, which is almost an exceptional feature in this part of the hills, forming as it were a flat tableland or hollow of limited extent, between the front or Kussowlie range and the second or Simla range of hills.

16. With regard to Sabathoo a good deal of difference of opinion exists; by many the locality is thought to have all the disadvantages of the plains with few of the advantages of the higher stations, especially as regards coolness. I do not agree in this opinion, for anyone who has come up direct from Umballa to Sabathoo must at once have felt the vast difference in temperature and in feelings experienced at the two places, the nights at Sabathoo being always comparatively cool, as may be expected at an elevation of 4,200 feet; indeed, if Sabathoo were less surrounded by hills and more of a plateau than a basin, its climate would be very enjoyable, and if more

stations at the same elevation and with equally convenient access to the plains could be found, they would prove in many cases more beneficial to weakly regiments than localities 3,000 feet higher. Sabathoo itself has not hitherto (that is in years gone by) had fair play, for when I first knew Sabathoo, even as late as 1863, most of the barracks were exceedingly bad; new ones and good ones have since sprung up, and I doubt not the place will prove a healthy locality.

17. Of course it may be said that in the interior of the Himalayas, in the Chini district for instance, all the evils of heavy rainfall may be avoided, and a climate delightful, while the front ranges of the Himalayas are drenched in rain and enveloped in fogs, may be enjoyed; all this is quite true, but it is equally true that locating troops far in in the interior of the Himalayas is a simple impracticability; in fact, if suddenly wanted, it would be far easier to get a regiment from England than from Chini; practically therefore we must consider our hill locations for British soldiers as entirely confined to the first or second range of hills, that is, not further in than Simla; and my belief is that within that area there are ample sites to be found for any number of men that can be spared from the plains. All access into the far interior, that is beyond the Simla range, may be said to be cut off, and all communication to be next to impracticable during the six winter months.

18. Again, apart from the mountain ranges, there are few healthy elevated plateaus in Bengal or in Northern India; nothing corresponding, for instance, to the Mysore plateau or tableland in Madras, on which, at an elevation of about 3,000 feet, we have one of the most delightful climates in all India; a truly intermediate climate, never too cold, and seldom uncomfortably hot. A glance at a map of India will, however, explain why this should be, and how very exceptional is the position of the Mysore district, situated on a comparatively narrow part of the peninsula of Hindostan, and within the influence of both monsoons, having always, in fact, the advantage of a sea breeze. The only other locality which I know, having some of the advantages, but only some, of Mysore, is the elevated tableland of Seonee in Central India, nearly midway between Nagpore and Jubbulpore.

19. It may no doubt be possible to find some few localities, such, for instance, as Loohoghat, or Bukloh below Dalhousie, on the southern aspect of the Himalayas, fit for occupation by British troops, at an elevation considerably below 7,000 feet; but another glance at the map of India, on which are shown the elevations of the several mountain ranges, will indicate how abruptly, as a rule, the mountains in Northern India rise on their southern aspect from the plains, with little or no intermediate rising ground between.

20. Further, I may add, that where hills of lesser height intervene, as, for instance, the Sevalik range which encircles the southern side of the Deyhra Dhoon, such hills are not healthy, nor suited for occupation by British troops; indeed many of the lower spurs even on the northern side, below Mussouri and Landour, at elevations of from 4,000 to 5,000 feet are not considered to be beyond the influence of malaria rising from the plain of the Dhoon below.

21. We may therefore, in considering the question of having troops in the plains, or of locating them at higher elevations, practically confine ourselves to the consideration of hill stations properly so called; that is, localities at elevations of from 6,000 to 7,000 feet above the sea; an elevation at which, even if overhanging the plains, as may be said to be the case with Kussowlie, there is little risk of any injurious influence from malaria from the plains below, although not complete immunity from winds more or less hot.

22. Unless therefore we can ascend to this elevation, or find localities of similar topographical character with Sabathoo or Loohoghat, we had better look for healthy localities in the plains than risk the location of men at so-called intermediate stations; that is, at elevations intermediate between that of the plains and of 7,000 feet.

[On the question of barrack construction, to which several paragraphs are devoted, Dr. Beatson's views differ from those of other authorities, but as this point is not before the Commission, it is unnecessary to enter on it.]

42. Another important matter for the consideration of the War Office Commission, as closely connected with that of barrack accom-

modation, will be the recommendations they may see fit to make as to what should be the constitution of the force located on the hills. If the present system of invalid depôts, a system liable to great abuse, and of which we cannot say the results are or have been very satisfactory, be abolished, or at least greatly modified, a large amount of excellent barrack accommodation will at once be available in the hills, which, with moderate additions, would accommodate an entire regiment at each station now occupied by a depôt. The required addition to the accommodation at each station would be comparatively inexpensive, as it would consist merely of one or two barrack bungalows, there being already at most of the depôt stations ample hospital accommodation, sufficient married accommodation, and all the requirements of skittle alley, reading, recreation rooms, &c.

43. It would materially assist the drawing of satisfactory conclusions as to the real benefits that have been derived from the present system of hill depôts if the results of residence there on sickly and weakly men can be traced; and there should be no difficulty in doing this, nor, from the information thus obtained, of ascertaining how many men were permanently benefited by a residence at a hill depôt during one hot season, and further, how many men after one, two, or three seasons' residence in the hills, had after all to be sent to England. I myself believe that the information thus obtained would show that the present system has not been a success; at all events there is little doubt on one point, that no small proportion of the invalids who arrive at Netley come from a hill depôt.

44. I will now observe, before concluding these remarks, that when I have spoken of locating regiments in the hills of Northern India, I am not at all an advocate for keeping the men, who will thus be in a cool and healthy climate, in idleness; on the contrary, I believe that the very best results of a hill climate will be obtained by utilizing as has of late been done to a great and yearly increasing extent, the labour of the men in the making of roads, and in the building of their own barracks or huts; a consideration which at once raises the question, is it useful or expedient to tie men down to one particular spot by the erection of regular barrack buildings, or might it not be better to let them shift ground and rebuild fresh huts in the vicinity of any sphere of work which may be found for them? If this system were followed, regiments could return to the plains in the winter for military exercises.

45. Nothing can be more satisfactory or encouraging than the health statistics of the various working parties who have been employed in road making along the line of approach to new stations, as for instance, on the Abbotabad road near Murree, and on the new line of road which is now being made from Donaira to Dalhousie. In every way the men have benefited, and so has the State; the work has been well done, and at a saving of expense; the health and physique of the men have improved, while their conduct has been excellent. It is in fact most encouraging to study the health statistics of these parties; to witness in the returns an almost entire exemption from those diseases which in the plains cause such loss of health and life, and to see a recorded death rate of little more than at the rate of four per thousand per annum.

46. As to the men, by being so employed, suffering as soldiers, that is, as drilled machines, I think such a consideration is not worthy of a thought. A man, it is presumed, will be a drilled soldier before he is employed on road making or other military works; and as he will be so employed only during the summer months, there will be the winter ones to devote to more purely military duties; in fact we have a proof in the state of the Royal Engineers that a man may be an excellent workman, and be very constantly engaged at his trade, and be at the same time an intelligent, smart, and efficient soldier.

47. In the hot weather of 1863, the 101st Regiment, which had suffered severely in health at Mooltan, was stationed at Rawul Pindee, with a large number of men at work on the new Abbotabad road near Murree, when suddenly, and from such excellent training, they were summoned for active service in the Umbeyla pass; there the men had to undergo great exposure, privation, and fatigue, but to all these they were fully equal, in fact the corps during this difficult and severe service not only sustained, but even added to the laurels of the justly renowned 1st Bengal Fusiliers.

V.—Hill Stations.

Should not arrangements be made for sending sickly men at once to the hills during the hot and rainy season?

This is the last query to be answered, and it is one which must be replied to with caution; indeed I greatly doubt the expediency or the propriety of attempting to lay down anything approaching to fixed rules on the subject. I would much rather leave the decision entirely to the authorities on the spot, for *extreme caution* must be exercised in the matter of moving sickly men even by railway in the hot weather in India; and when a man supposed to require change is at a station any way distant from the foot of the hills, such a move, if he did not die in transit, would probably remove all hope of his recovery.

From some other stations, Umballa, Roorkee, or Rawul Pindee for instance, or from the valley of Peshawur to Cherat, it might be possible, by a well-arranged system of transport, to give men even seriously ill the chance of benefiting by a move to the cooler climate of the hills; but in the wet weather, when, as a rule, men are suffering from acute disease of the liver or bowels, a sudden change to the cold and damp of a hill climate would be almost certain death. It is therefore out of the question for anyone not on the spot, and *weighing well* all the circumstances of each individual case, such as the state of the patient, the length of the journey, and consequent exposure involved in getting the sick men to the hills, to say whether or not removal in the hot weather would in any individual case be justifiable or not; as a *general practice* it would certainly neither be desirable nor safe.

G. S. Beatson, M.D.,
Inspector General of Hospitals, Principal Medical Officer.

Royal Victoria Hospital, Netley,
25th April 1870.

No. 3.

A Report of a Sanitary Tour.

To the Under Secretary of State for India. From Surgeon T. G. Hewlett, Health Officer of Bombay.

Sir,

I have the honour to report to you, for the information of the Secretary of State for India, that in accordance with the permission granted to me in your letter, dated June 3d, 1869, I have visited the towns marginally noted with the view of inspecting works of main sewerage, water supply, and sewage irrigation.

These towns embrace the following classes:—

1st. Those situate in purely agricultural districts, such as Banbury, Warwick, Rugby, Bedford, &c.

2d. Inland centres of manufacture, such as Birmingham, Manchester, Leeds, &c.

3d. Seaport towns, such as Liverpool, Glasgow, Swansea, Portsmouth, &c.

The moral, physical, and economical conditions in each class vary, and had I proposed to have undertaken a satistical and special inquiry, embracing all the causes that effect the sanitary standard of each particular town, such conditions would have had to be specially considered and reported upon; but such an analysis would have necessitated a long residence in each place, and would have been beyond the scope of the present inquiry.

It therefore appeared to me desirable to trust to the Local Authorities for a description of the various works and facts relating to sanitation in each particular town, and I accordingly append statements which have been compiled from extracts from reports, and from information given me by Local Authorities.

I can never be sufficiently grateful for the kindness which Mr. Rawlinson's introduction ensured me at most of the towns under report, or for the very liberal manner in which I have been supplied with printed reports, plans, maps, &c., &c.

My especial thanks are due to Mr. Newlands, the borough engineer of Liverpool, who furnished me with copies of his own and Dr. Trench's reports, besides those on all other matters concerning the municipal administration of that city.

I am also much indebted to Mr. Till and Mr. Gray, of Birmingham, to Mr. Filliter, of Leeds, to Dr. Little and Mr. Lynde, of Manchester, to Mr. MacPherson, of Edinburgh, who gave me Dr. Littlejohn's admirable report on the sanitary state of that city, to Mr. Carrick, and in an especial manner to Dr. Gairdner, of Glasgow, whose reports are particularly valuable, to Mr. Cousins and Dr. Davies, of Swansea, to Mr. Latham, of Croydon, as well as to other gentlemen with whom I was brought in contact.

The literature pertaining to sanitation, embodying the varied experiences of all the most skilful engineers and officers of health in the United Kingdom, would be of incalculably greater value if it were more easily obtainable, and it seems to me to be a matter of regret that all such reports are

Banbury.
Warwick.
Coventry.
Rugby.
Bedford.
Leicester.
Birmingham.
Liverpool.
Wigan.
Preston.
Blackburn.
Manchester.
Bradford.
Leeds.
Lancaster.
Penrith.
Carlisle.
Hexham.
Sunderland.
Tynemouth.
Alnwick.
Berwick-on-Tweed.
Edinburgh.
Glasgow.
Swansea.
Portsmouth.
Worthing.
Hastings.
Dover.
Croydon.

not forwarded to a central office for distribution, not only to other towns in the kingdom but to the colonies, as at present they are beyond the reach of the public, being only circulated among the members of the particular municipality to which they refer.

In this sketch I shall confine myself to summarizing those lessons I have learnt which appear to me to be more especially applicable to India, and shall venture to make suggestions regarding those points which seem to me might be advantageously entertained for adoption in India.

I would premise, however, lest it should be thought that I at all depart from matters more immediately connected with my profession in giving an opinion as to certain details of sanitary engineering, that I would ask for indulgence on the plea that as the origin of certain diseases is undoubtedly to be traced to the faulty construction of works of sewerage, &c., I, as a Health Officer, must be necessarily interested in seeing, and should fail in my duty if I did not see, that all those avenues through which, in my opinion, disease may be entailed on a people committed to my charge are efficiently defended in the only way I believe they possibly can be, in the introduction of those works which, if constructed on true hygienic and common sense principles, are among the greatest blessings engineering science has conferred upon communities, but which prove the entire reverse if the principles I allude to are neglected.

Viewing then the question of sanitary engineering as a border land in which engineers and Officers of Health are both equally interested, and in which they may both freely express their opinions, I would state my conviction that any system must fail if it is not *universally* adopted in the inhabited place to which it is applied.

In Manchester, Liverpool, Birmingham, &c., only a portion of the houses are fitted with water-closets. In the remainder, and in Manchester (where the corporation discourages their use) in the larger portion there are middensteads, or receptacles both for nightsoil and ashes, which are in my opinion doubly objectionable, as they have to be periodically cleaned at a great expense; but, as they necessarily entail the accumulation of nightsoil in the vicinity of human habitations, are sources of danger, however carefully constructed or ventilated they may be.

As far as I can see, water-carriage appears to be, under existing circumstances, the most convenient vehicle for the removal of all refuse from large towns in England.

This system has not been tried in India, and it remains to be seen whether it is the one best suited to the local habits of the people,* and whether a sufficient supply of water can be provided to carry the sewage to its outfall before decomposition has set in.

I will not in this paper discuss the question, whether in India it would not be better to exclude nightsoil altogether from the sewers, but, on the supposition that both the above conditions are fulfilled, and that a general watercloset system has been determined upon, I hold that works of main sewerage to be effective should essentially embrace the following points, which have been so concisely expressed by Mr. Newlands, the borough engineer of Liverpool, in his report of 1848, that I copy them from it,—

First. The removal in covered conduits from the houses—(Mr. Newlands adds "and of streets," but this I object to)—of all refuse capable of suspension or solution in water, as far as it is produced, in such a manner as shall prevent the generation of noxious gases.

Secondly. The perfect underground drainage of the whole strata to such a depth as will keep the lowest parts of the buildings free from damp.

Thirdly. The disposal of the refuse, so that it may not pollute the natural drainage outlets, the streams or rivers in the vicinity, or vitiate the atmosphere, but may be applied to the legitimate use of increasing the fertility of the surrounding country.

The first condition, especially in a country like India, where the rain only falls during certain months of the year, would, in my opinion, be best attained by the adoption of the separate system, and by a strict observance of the rule that sewers should invariably be laid in straight lines, and be only of a size sufficient to remove the sewage matter whilst the rainfall should be allowed to flow away into its natural channels.

The towns sewered under the direction of Mr. Rawlinson attracted my immediate attention by the observance of the common-sense rule of sewers laid in straight lines.

The introduction of stoneware or earthenware pipes as channels for the conveyance of sewage matter has effected a complete revolution in sanitary engineering, and I am fully satisfied that immense good would result if Government was pleased to send out to India men competent to instruct the natives in the manufacture of them.

While leaving the main sewers to be laid by the engineer, I think that the Health Officer should still see that at their points of connexion with inhabited houses no danger to health is likely to accrue.

The mode of laying the subordinate sewers which seems to me to be best is the common-sense one which obtains at Swansea, and which from the existence of sweeper's passages would be peculiarly adapted to Bombay.

This, to quote from the report of Mr. Davies, the able Medical Officer of Health, of Swansea, is carried out as follows:—"Houses are not drained directly into the main sewer but into sub-"ordinate sewers at the rear of houses on both sides of the street. The sewers are easy of access, "and the drainage of back premises is not carried under the houses. Each house is connected "independently with the subordinate sewer, which is finally connected with the main."

Perfect ventilation of all the sewers is essentially necessary. I have seen many methods adopted to effect this most difficult but all-important question. Either as Mr. Rawlinson always orders with so much success—to quote again from Dr. Davies—"by ventilating shafts in con-"nexion with every manhole along the course of the main sewer, at an average distance of 40 yards

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* Since the above was written, I have heard from Dr. Sutherland that an apparatus suitable for the manners and customs of Oriental races has been contrived by an officer of the Royal Engineers, who has had great experience of the requirements of the natives in Turkey, and that the Turks are now introducing drainage, and similar latrines, on their own account.
The success of such an apparatus would remove *one* of the objections to a watercloset system for India.

" from each other, each ventilating shaft being fitted with trays filled with finely broken vege-
" table charcoal, through which the gases must pass before they escape into the street."

I would here remark that some engineers, especially in manufacturing towns where there is a great escape of steam into the sewers, object to the use of charcoal for the reasons given by Mr. Newlands in his evidence before the Liverpool Mortality Sub-Committee, published in 1866, page 56, where he says, " Charcoal in the concrete state is a very good condenser of gas, but I
" have always found it fail when brought into contact with watery vapour, as when it is put over
" a sewer. The action of the charcoal is mechanical—it acts as a sponge, and as its affinity for
" watery vapour is greater than for any gas, it does not act so well as a deodorant in damp as in
" dry situations."

I was shown, however, at Croydon, by Mr. Baldwin Latham, a charcoal ventilator lately invented by himself, which from its mechanical ingenuity will, I think, prove to be perfectly successful in its action, as all danger of the charcoal being in any degree wetted is entirely prevented.

At Liverpool and other towns the rain-water spouts, where the tops open above the level of the highest windows, are used to ventilate the sewers.

I cannot but think such a method is a hazardous one, though Mr. Newlands, whose great experience of course is extremely valuable, thinks they are safe ; yet I do believe that in certain conditions of the atmosphere the sewer gases would be likely to be brought down into the sleeping apartments, and that therefore this method should not be adopted.

In Liverpool Mr. Newlands has used for the last 18 years, and has lately greatly extended the introduction of the Archimedean Screw Ventilator. This consists of a pipe carried from the top of sewers to the summit of any high building adjoining, the pipe terminating in the Archimedean Screw Ventilator ; and he proposes to apply these at the dead ends of sewers and where sewers and drains change their direction and gradient.

This invention appears to me likely to be of infinite use in India, not only for ventilating sewers, but also buildings, as it ensures a rapid exhaustion of the air below, and will act incessantly whenever there is, as in Bombay, a continuous current of air.

Ventilation by the connexion of sewers with furnaces would be applicable in but a very few places in India.

The flushing of sewers is effected in various ways—both by flushing chambers over the line of sewers filled by connexions with the water mains; by self-acting tumbler receptacles, as at Swansea and at Leicester; by a moveable flushing tank, capable of holding upwards of 1,000 gallons of water, which is suddenly discharged into the sewer, all of which methods are applicable to India.

Regarding the sanitary defences requisite to protect the interior of houses from the entrance of sewage gas, I think that all house drains should, just before their connexion with the sewer, be fitted with a syphon trap, as at Swansea, Leeds, &c., and that all waterclosets of course should be fitted with syphon traps ; that the sink pipes from sculleries, kitchens, baths, &c., should—as recommended at Manchester and Swansea—not be carried direct into the house drain, but be led outside the houses and there fall from a height not less than 1 foot into a covered receptacle, capable of being cleaned and fitted with a syphon trap, which should communicate with the house drain, and that the house drain itself should in all cases be fitted with a special ventilating pipe, to be carried 6 feet above the top of the house.

As a still further and most important protection of houses, I would insist on every watercloset being fitted with an especial ventilating shaft, which should likewise be carried above the roof of the house.

The measures above mentioned severally appear to me to be necessary, to prevent the entrance of sewer gas into houses, and I do not think that any one of them could safely be dispensed with, especially in the case of house connexions with sewers conveying nightsoil.

The evidence of most engineers I have asked seems to prove that the house drains, as a general rule, should not be of a less or greater size than 6 inches.

The trough waterclosets in use at Liverpool, and the self-flushing tumbler waterclosets at Leeds, where they answer remarkably well, appear to me to be the best kind for use in poorer districts, especially for closets which are frequented by more than one family.

As regards the disposal of sewage, I am certain that any attempt at rendering the effluent water pure by the separation of the mechanical impurities held in suspension must prove abortive, whether by the use of filters as at Coventry, or by precipitation with lime as at Leicester, or by simple settling tanks as at Birmingham, or by the A B C process as at Leamington, or by the use of chemical agents, as it is hopeless by either one or any of these operations to render the effluent water anything else than sewage.

All these plans appear to me to fail in meeting the requirements of the case; and the continued practice of allowing the effluent water to pollute running streams, as at Coventry, Birmingham, &c., seems to me to be exceedingly wrong.

Being quite convinced that, in the course of a few years, the question among practical farmers will be, not whether sewage can profitably and without danger to the public health be applied to land, but which farmer can succeed in getting even a share of the much coveted sewage, I will first notice what appeared to me to be the best plan for effecting the separation of the solid matter from the sewage before its application to land, for this I consider, especially for India, to be a necessity. At Bedford, where the separation was only partially effected, there was in parts of the fields where the sewage had settled a dried black scum which, under the hot sun of India, would have given off an offensive odour.

In India, from the habit of the natives using water after defæcation, there will not be nearly as much solid matter as in the sewage in England.

The means that I have seen used for effecting its separation are, as I stated above, by simple mechanical deposition ; by filtration through coarse gravel and stones ; by precipitation with lime; by the use of other ingredients, such as in the A B C process (animal charcoal, blood,

alum, and clay). And the general plan adopted is to have at the outlet extensive masonry beds, either covered as at Coventry, or uncovered as at Birmingham, &c., in which these operations are conducted, and from which an offensive smell is liable to be given off during the process of cleaning.

I believe all these plans will be entirely superseded by a simple but most ingenious contrivance invented by Mr. Baldwin Latham, and which I saw being experimented upon at Croydon.

In the middle of the stream of sewage at the outfall has been erected a turbine, which, acted upon by the cleansed sewage water, revolves between itself and the main stream of sewage an iron wheel, about 14 feet diameter and about 2 deep, which is divided from the outer edge to the centre into compartments which intercept the solid matter (consisting of all kinds of filth, among which I saw a dead dog, a tin biscuit box, road drift, &c.), which is carried up until the compartment is over the central line, when the solid matter falls over the central axis, which is furnished with an Archimedean screw, which worms it to a point outside the end of the axis, where another screw conveys it to waggons standing ready to receive it, and by which it is periodically removed; while the side of the wheel furthest from the incoming sewage is covered with galvanized iron network, through which the strained water passes.

The next point to be considered is the quantity of land which would be necessary for a given population.

I do not think that this question can be answered off hand. At Barking and Croydon from 5,000 to 6,000 tons of sewage, or a quantity equal to 100 persons per acre, have been applied to every acre. At Banbury I was told this was too strong a proportion, and that 80 persons per acre would be a better dilution; but so much depends on varying conditions of population, soil, &c., that I believe this question will in each place have to be settled by the consideration of local peculiarities.

Regarding the, to me, most important question of how near to the inhabited place may a sewage farm be established without danger to the public health, I cannot say that, from any evidence I have been able to collect, I have arrived at any very definite conclusions based upon facts.

I inquired into the alleged outbreak of disease at Carlisle in consequence of the sewage farm, and the result will be found in the statement compiled from information kindly given by Mr. Morley.

As regards the Craigentenny meadows, near Edinburgh, Dr. Littlejohn says: "Under the "influence of the improved agriculture of the present century, extensive swampy tracts which "existed to the west of Edinburgh have been reclaimed, and it is to be regretted that the sewage "of the inhabitants should now be employed to create an evil from which we have so recently "been delivered. * * * * * At present there is no control over the "irrigation. No one can inspect it in operation without seeing that it is carried in the cheapest "and most slovenly way, and the smells complained of arise chiefly from the foul state of the "larger channels. * * * * * Edinburgh, from its situation, is "peculiarly exposed to suffer from the effects of the emanations from these meadows. The "easterly are our most prevailing winds, which pass across these meadows before they sweep over "the new and the more elevated portions of the old town, and it has been plausibly conjectured "that the insalubrity of these winds depends largely on this contamination. But, at any rate, a "city surrounded by swamps cannot be regarded in a sound sanitary condition, and it is highly "probable that a great part of the mortality of the abbey and some of the poorer districts of the "old town is in a great measure owing to the unhealthy character of these breezes, which blow so "continually during many months. It is difficult otherwise to account for the high death-rate of "the district of the abbey, in which there is little overcrowding, and where only a small population "can be said to belong to the poorer class."

Complaints have also been made regarding other farms, especially when they are first formed; but much of these complaints may be due to prejudice. Certainly during my visits I did not discover in any farm anything offensive to the sense of smell; but it is at present impossible to say what the effect may be on persons habitually exposed to currents of air passing over a farm whose success depends on irrigation with matters in solution which are readily putrescible.

Having then due regard to the dampness of soil, evaporation from surface, and increased vegetation consequent on irrigating land with sewage, I think that the question of distance from the inhabited place must depend to a great degree on the number of population, on the quantity of water carried to the outfall, and the capacity for absorption of the soil to which the sewage is applied.

For a population of upwards of 200,000 persons, with a quantity of sewage equal to 30 gallons per head, my impression is that a less distance than three miles would not be safe; but, as I said before, more evidence is required on the subject before a definite conclusion could be arrived at.

Engineers, ratepayers, and farmers would all be interested in reducing the distance as much as possible; but health officers would in my opinion view with anxiety any scheme proposing to put large volumes of sewage on land nearer inhabited places than I have mentioned.

Regarding the best method of applying sewage to the land, for England as well as India, I am convinced the simpler the means used the more surely will success attend the experiment, whether from a sanitary or pecuniary point of view.

The first thing is to have the land, as at Aldershot, scrupulously levelled on a slope. This may entail a heavy outlay at first, but such an expenditure will be amply repaid by the power of utilizing equally every part of every field. Common sense should have prevented the adoption of the ridge and furrow system, as it stands to reason that the sewage matter must lie in the furrows for unequal distances, and that the ridges could get but little sewage; and yet I saw land at some farms in the ridge and furrow.

Of course the sewage would be delivered, whether by gravitation or by pumping, at the highest level of the farm, from whence main carriers, which it is advisable should be covered (as at Norwood), can be laid so as to command the areas below them, and these areas can be divided

into panes by simple earth trenches, of course according to the contour of the land, but generally at about a distance of 70 feet from one another.

The expensive arrangements connected with these communicating carriers that obtains at Worthing are very unnecessary ; a simple piece of board puddled in with earth being all that is requisite ; but, as Mr. Clifford says in his most excellent report on the Warwick farm, and to which I beg to call especial attention, the natives of India are all "skilled irrigators," and I have no fear but that they will, under supervision, lay out the ground to the best advantage.

All crops are improved by sewage, but, as Mr. Clifford says, Italian rye grass is a "gross feeder" and will take "any quantity" of sewage. After the third year, however, it is advisable to plough up and re-sow either with rye grass or a root crop such as mangold wurzel.

Italian rye grass seems peculiarly well adapted for the supply of food for the cattle of a large city like Bombay ; and though I have seen celery, broccoli, &c., &c. growing under the application of sewage, yet for India, knowing as I well know the childish fears and superstitions that the natives hold with regard to European interference with anything connected with their food, I should advise that at first sewage be applied only to food grown for cattle or to cotton fields, leaving the natives themselves, as doubtless they would when they find it would pay, to apply it for the growth of esculent vegetables.

About five or six crops of Italian rye grass, weighing from 16 to 20 tons per acre seem to be the average annual yield of land irrigated by sewage.

I also directed my attention to the requirements of isolated places in rural districts beyond the reach of main sewers. The method I think suitable for them may be perhaps best illustrated by relating the conditions I found on a small property I was consulted about and the measures I took to cure them.

The house, with garden attached, was situated within its own fence enclosing about two acres of land, and having only one cottage in the immediate vicinity.

In the garden was the servants' privy, which consisted merely of a seat over a bricked cesspool, which was within 40 feet of the stable well, the water of which was used for drinking. I had the cesspit thoroughly cleaned out, lime-whited, and the seat nailed up, and a Moule's earth closet placed inside ; the pail being emptied every day into a trench in the garden.

Inside the house was a watercloset, which discharged into a cesspool 8 feet from the house, into which the water from the scullery also flowed, and the drain from both passed alongside a well used for drinking purposes, the cesspool being only 15 feet distant from, and on a higher level than the well. The gravel between the cesspool and well was black and stinking. I had the cesspool cleaned out and lime-whited.

An earth closet was inadmissible within the house, so I placed within the cesspool one of Chessyre's intercepting tanks. That is almost hermetically sealed, as it is double syphon trapped, The solid matter, paper, etc., is arrested by a screen which permits the passage of water, which flows away through a syphon trapped glazed pipe, and eventually discharges itself at a distance from the house beyond the property into a surface drain. The smell both inside and outside the house, before much complained of, has entirely disappeared. The iron tank will require cleaning periodically, the patentee states once in six months, but this is a matter for experience to decide.

In order to secure the drainage of subsoil, I would in all cases insist on the condition laid down by Mr. Chadwick, in his paper on the sanitary principles of cottage improvement, and published in the journal of the Society of Arts, viz., that the water table shall be lowered not less than three feet. I hold this to be of the greatest importance, especially in the malarious soil of India, where too often residences consist of one floor only, elevated above the ground by a plinth of a few feet high.

I would certainly prefer that the subsoil water was carried away by the rain-water drains, but if that cannot be done, I recommend that all subsoil drains shall, before their junction with the sewers, be not only syphon-trapped but ventilated between the syphon and the sewer, otherwise sewer gas may find its way into the house.

As regards the water supply of towns, I hold that the Medical Officer of Health should direct his attention primarily to the purity, and, secondly, to the sufficiency of the quantity of the water supplied to his people, and that then, leaving the purely engineering questions of collection and stowage to those best fitted to deal with these matters, should see that by its distribution no injury was entailed on the public health. From the evidence I could collect, it appears to me that when a sufficient quantity of pure water is stored, it should be at all hours of the day and night at the disposal of the people ; that in its passage from the reservoir to the houses in the town it should be guarded against any possibility of being tainted by any foreign matter whatsoever, and that the water used for domestic purposes should not be stored in any cisterns, which are always liable to be fouled, but that it should be drawn off direct from the mains.

If cisterns for waterclosets are necessary to prevent waste, that only those on the principle of Messrs. Guest and Chrimes waste-water preventers be adopted, as these provide a sufficient quantity of waste to flush the soil pipe on each occasion of the closet being used, but have no overflow into the sewer.

All house traps should be of the best possible construction, and obtained from the best makers, such as Messrs. Guest and Chrimes, or Messrs. Kennedy, as cheap fittings have been well described as the curse of waterworks.

The waste of water should be prevented, as it entails an unwholesome wetness of the subsoil, and consequently exposes the people to evils arising from damp.

To give some idea of the extent to which such waste may prevail, Mr. Latham, in a recent report to the Croydon board of health, estimates that nearly 1½ million gallons are daily lost by leakage or illegitimate use.

The best kind of waste-water preventer for stand-pipes in streets that I have ever seen is that made by Messrs. Kennedy, and in extensive use in Birmingham. This will only supply water as long as an iron cone, which allows the water to escape, is turned by the hand. It cannot get out of order, or be kept open by improper means, and would be especially useful in Bombay.

I cannot but think that the water supply of towns should be at once removed from the hands of companies, and placed under the control of the sewer authorities.

But few places in India would, however, be for years to come supplied by water brought in from a distance. The present supply is too often obtained from the village tank, which is almost invariably filled with the debris of vegetation.

Much I think might be done to improve the condition of this water by the use of the usual sand and gravel filters, but the filtered water should not, as at Rugby, &c., be exposed to the liability of being tainted by the floating impurities of the air, but be received into covered reservoirs from whence it might be drawn off as required.

As an executive Health Officer I was much interested in seeing the way in which the scavengering of cities is performed, and especially in the arrangements adopted in Edinburgh and Liverpool, for I am convinced that however well a town may be sewered, yet that the removal of the surface filth is a matter of equal importance. In India almost all the filth that can be collected is from the surface.

The faithful persistent cleansing of the surface can only be effected at a great cost, and in India we cannot at present reduce this, as in the United Kingdom, by the sale of the refuse as manure.

No one can peruse the earnest and invaluable reports of such men as—

Dr. Gairdner,	Medical	Officer	of Health for	Glasgow,
Dr. Littlejohn,	,,	,,	,,	Edinburgh,
Dr. Trench,	,,	,,	,,	Liverpool,
Dr. Little,	,,	,,	,,	Manchester,
Dr. Robinson,	,,	,,	,,	Leeds,
Dr. Davies,	,,	,,	,,	Swansea,

without feeling that the very greatest amount of sanitary knowledge is placed at the disposal of the various communities to which they belong. In the reports of these officers are many hints which would be of the utmost value to the members of the medical services in India. "The Cholera Instructions" issued by Dr. Gairdner in 1866 are of infinite importance, and should be more generally known; but from these reports the lesson may be learnt, that a good sewerage system, a pure water supply, a scientific application of the sewage to the land, combined with a proper cleansing of the surface, will be inefficient as long as the tenements of the inhabited place are overcrowded, ill-ventilated, and shut out from fresh air and light, as long as the refuse and waste products of negligent traders are allowed to vitiate the atmosphere, as by the deadly arsenical and sulphurous fumes given out from the copper-smelting furnaces of Swansea, or by the horrible bronchitic-giving smoke belched forth from the chimneys of Lancaster, where earth, air, water, and animals are alike fouled by the shameless waste of coal. And here I would speak of what has indeed been told me by municipal officers in many towns, that local self-government uncontrolled by the supervision of a central authority is, and must be a fatal bar to the sanitary improvement of that kind of property which stands most in need of it, and that the liberal-minded men of such boards are out-voted by the petty shopkeeper class, whose only desire is to keep down the local rates, careless so long as they save their own pockets, whether the sanitary requirements of the poor are uncared for. It would, in my opinion, be a sad day for the welfare of India, if the control of sanitary improvement were to be vested in the hands of local authorities, without the State excerising a due supervision, in order to compel the sanitary requirements of the masses receiving that care and attention which they have a right to expect from a wise and provident Government.

(Signed) T. G. Hewlett,
Surgeon Bombay Army, Health Officer and Coroner,
City of Bombay.

October 15th, 1869.

Information from the towns of Wigan, Lancaster, Tynemouth, and Dover was not received in time for publication.

BANBURY.

The following statement is copied almost verbatim from a valuable report, kindly placed at my disposal by the author, Thomas Pain, Esq., clerk to the local board at Banbury. Certain extracts from the Municipal Corporation Directorys' have also been embodied in it.

The district of Banbury comprises the corporate borough of Banbury, and the non-corporate township of Neithrop, in the county of Oxford, and Grimsbury, in the county of Northampton.

In 1852, the provisions of the Local Government Act were applied to Banbury, and a local board of health formed. It is composed of 13 members, six selected from the town council, and six elected by the non-corporate parts, whilst the mayor for the time being is *ex officio* a member of the board.

The principal trade consists in the manufacture of girths and webbings for exportation to the Continent; there is also an agricultural implement manufactory, and the town is a centre for the sale of agricultural produce.

The population of the district in 1861 was stated to be 10,238; it is now (1869) estimated at about 11,000. The area is 4,000 acres, and the rateable value 39,227*l.* 17*s.* 6*d.*

In 1868, the rate in		Baubury was	1*s.*	11*d.*	in the pound.
,,	,,	Neithrop	1*s.*	9*d.*	,,
,,	,,	Grimsbury	2*s.*	4*d.*	,,

Shortly after the formation of the local board of health, a system of drainage was commenced, the greater part of which was executed in 1855 and 1856. It carries away both the storm water

and the sewage, and originally had its outfall in the Cherwell, a small river or stream which flows past the town.

Complaints soon after arose from parties living further down the stream that the river was poisoned. Deposit and filtration tanks were erected at a cost of about 500*l.*, with a view of remedying the annoyance complained of; but as these works did not prove effective, the board subsequently spent about 800*l.* in making additional tanks, and first applied carbolic acid and lime, and afterwards per-chloride of iron and lime, with a view to deodorize and disinfect the sewage before it passed into the stream, but with the like unsuccessful result.

The owner of Twyford Mill, three miles off, moved for an injunction in the Court of Chancery, which was granted, forbidding the further discharge of the sewage into the river, so as to cause annoyance and injury to the plaintiff. A writ of sequestration followed but was not put in force, as the local board determined to try the effect of the application of the sewage to the land, and accordingly a farm was obtained at about a mile's distance from the town.

The fresh sewage of the town is conducted by a main sewer into the above-mentioned tanks, which may be described as deposit, filtration, and stowage tanks.

Filtration is effected through an upward filter composed of small stones and gravel.

After passing through the deposit and filtration tanks, where the solid matter, paper, &c. is arrested, the liquid sewage passes into a tank, from a well connected with which it is pumped by a condensing engine of 18-horse power up to the highest level on the north-west corner of the farm.

The deposit and filtration tanks contain together an area of 510 superficial yards, and are capable of holding in the aggregate about 130,000 gallons, whilst the stowage tanks are of sufficient space to hold about 100,000 gallons, the amount of a night's flow; and this large tank space has been found advantageous, not only for the purpose of deposit and filtration, but in rendering any night pumping unnecessary.

The deposit and filtration tanks are in duplicate, and each set is emptied about once a month, and the deposit mixed with the sweepings of the streets and ashes, and other refuse collected from houses, is then conveyed in boats along the Oxford Canal which adjoins the sewage works, and sold to the occupiers of land on the banks of the canal.

The farm contains about 60 acres of arable and 76 acres of pasture, including one acre of roads. The soil is generally of a very stiff loam, though in parts gravelly. During the winter of 1866, and the spring and part of the summer of 1867, the arable land was levelled, and with the exception of two pasture fields, containing 24 acres, which are in ridge and furrow, the whole of the farm has been also levelled. The part in ridge and furrow is irrigated, but is found not to be so suitable for sewage irrigation as the levelled part, inasmuch as the sewage is not so regularly distributed over all parts of the land; the sewage flowing from the two ridges gives too much to the furrows.

The sewage, from its outlet on the highest level, flows by gravitation through carriers or trenches cut in the earth on raised embankments, and from the main carriers is conducted by smaller ones to any part requiring irrigation, and after having passed over the land is discharged free from smell into the river Cherwell.

The principal crop is Italian rye grass; there is also an acre of cabbage, and a small quantity of carrots and parsnips, and about 14 or 15 acres of mangold wurzel. For all these root crops the sewage is applied to the land before sowing and not whilst they are growing.

The following is an account of the receipts and expenditure in respect of the farm for the year 1868 :—

Receipts.	£	s.	d.
Amount realized for sale of rye grass	561	16	6
Do. for mowing grass	347	18	2
Do. for oats	198	0	0
Do. for aftermath	166	11	8
Right of shooting over farm and sundries	6	1	6
	£1,280	7	10
Deduct payments	1,190	13	1
Profit on farm	89	14	9

Payments.	£	s.	d.
A year's rent, less property tax	605	3	1
Rates and taxes for the year	57	4	7
Coals for engine	111	16	0
Labour on farm, including engine-driver's wages, &c.	216	2	0
Seeds, implements, &c.	82	0	6
Manager's salary	45	0	0
Auctioneer's expenses of sale, including commission	73	6	11
	£1,190	13	1

The adoption of the irrigation works cost 4,000*l.*, and 1,500*l.* had been previously borrowed for the erection of tanks, &c., or 5,500*l.* in all. This amount is to be paid off in 30 annual instalments of principal and interest at 5 per cent. The instalment therefore of principal and interest, in respect of the loan of 4,000*l.* borrowed to carry out the irrigation works, would be 250*l.* (200*l.* interest of 50*l.* principal). If therefore the profit on farm has to be deducted from this, there would be a loss of 160*l.* 5*s.* 3*d.*, which would be about 3½*d.* per head of the whole population (estimated at 11,000) for the removal of all the excreta of the inhabitants.

The death rate has decreased since the introduction of the Public Health Act, when it was 26 per 1,000 of the population.

In 1859 it was	20	per 1,000	
1860	18½	„	
1861	14	„	
1862	14½	„	
1863	17	„	
In 1864 it was	17½	per 1,000	
1865	20	„	
1866	17	„	
1867	19	„	
1868	20	„	

so that the average for the last nine years is 18 per 1,000.

The drinking water supply of Banbury is in the hands of a company. Its source of supply is from the river Cherwell, and the works are situated on the river, about a mile above the town. The river water flows into two filtering beds, which are of the usual construction; the water filters through a layer of about 15 inches of fine sand, thence through about 12 inches of fine and 9 inches of coarse gravel, and lastly through about 6 inches of large rubble stones which are laid in covered bricks with apertures at intervals. The filtered water passes through these brick drains to a centre drain which opens into the bottom of the pure water well, from whence it flows into a suction well and is pumped by a 16-horse power engine to a reservoir on the top of the Hasington Farm, from whence the town is supplied. This reservoir holds 248,000 gallons, but only about 190,000 gallons are pumped daily.

WARWICK.

The following statement embodies information kindly given me by J. Fenna, Esq., borough surveyor; and also a most valuable report by W. Clifford, Esq., under whose able management the sewage farm has obtained so much success. Extracts have also been made from the Municipal Corporations' Directory.

The town of Warwick has water communication with many towns by means of the river Avon, on which it is situated, and also by means of the Warwick and Birmingham, and the Warwick and Napton canals. The Oxford and Birmingham branch of the Great Western Railway also runs through the town.

Population, according to the census of 1861	10,570
Estimated in 1869 to be about	11,000
Inhabited houses in 1861	2,272
„ 1869	2,390

A main drainage system was carried out in 1851. District sewered covers 1,270 acres. The street gulleys and the roofs of the front of houses are connected with surface drains, which convey the water from them to the river Avon. The water from the back yards and from the roofs at the back of houses finds it way into the sewers. The main sewers are glazed earthenware pipes, varying in size from 18 inches at the outlet by 15 inches, 12 inches to 9 inches at the top levels. There is a flushing pipe with a 2-inch cock at the head of every main pipe. Ventilation is effected through the rain-water pipes.

About 200 houses in the towns are not connected with the sewers; at these there are cesspools, but they are being gradually abolished, so that in a short time all the houses will have water-closets. Every watercloset is fitted with a syphon trap.

The scavengering of the town is performed by men employed by the corporation.

Mr. Clifford's Report.

The sewage flows by gravitation from the town to the pumping station, which is situated on the Stratford Road about three-quarters of a mile from the town. It empties into two reservoirs, each

76 ft. 6 in. long, and 17 ft. 6 in. wide at the bottom.
112 ft. 6 in. „ 33 ft. 6 in. „ at top.

The depth of these reservoirs is 9 ft. 6 in., but they fill only to 8 ft.

At about 12 ft. from the entrance of the sewer, a screen composed of wooden planking perforated with holes about 1 inch in diameter, and separated by about 6 inches from each other, extends across each reservoir. This screen is let into brickwork, and at the bottom and in the centre of each screen is a sluice. The paper and solid matter are arrested by the screen and periodically (about once in 12 months) are taken out, mixed with ashes, and sold as manure.

The sewage is then pumped by two engines, made by Gimson and Co., Leicester, each of 25-horse power. Each engine works a double-acting pump 18 in. diameter, 30 in. stroke; maximum speed 25 revolutions, minimum 20; each pump forcing 1,080 gallons per minute; they pump the sewage through a rising main of 16 in. to a point 73 feet above the bottom of the well, on the farm three-quarters of a mile distant.

The Warwick farm consists of 102 acres, generally of heavy clay land. It is about a mile from the town. It is taken on lease of 21 years on a rental of 300*l.* The tithes and taxes amount to about 100*l.*, making a total of 400*l.* The lease dates from Lady-day 1867; it was then about half arable, half pasture on the old ridge and furrow. With the exception of one field (12 acres) of old pasture, all the land was broken up, got into shape, and seeded down with Italian rye grass within the year. The sewage was first delivered in the last week of July 1868; but there were frequent interruptions until December, since which time the delivery has been constant.

The upper portion of the farm (25½ acres) is undulating, falling on two sides at different inclines (which cover about 40 acres) to the flat land, containing about 36½ acres.

The irrigation is by catch-waster pane and gutter, ridge and furrow, and bed, and the sewage in conveyed by open runs. The arterial drainage in two fields is perfect, on others very defective, some not at all.

The plant virtually lost its first year's growth and suffered great injury from the heat and drought of 1868. No produce was obtained until the autumn of that year.

This year (1869) four and five crops have been cut to date (September). With the exception of the second spring crop all have been light. The yield of our best fields is as follows to acre—in tons:—

No. 1.	2.	3.	4.	5.	Time of cutting.
2.2	3.	2.12	1.18	3.16	February, March, and April.
12.8	10	3.8	6.16	5.8	May and June.
6.0	4.17	10.10	6.7	8.4	June and July.
3.4	3.16	4.10	4.7	3.10	July and August.
		3.0	2.16	2.13	August and September.

No. 1 is now (September) ready for cutting, and No. 2 will be shortly.

The plant is becoming thin, dying out fast in many fields, and is largely replaced by natural grasses.

Owing to the nature of the soil, breaking it up is a serious and expensive matter, it can be only worked at certain seasons; in fact, when it can be caught, to use a homely but apt expression, the land is either "all bricks or all mortar." We have tried ploughing and skim ploughing and burning, but found both alike unsatisfactory and costly. The loss of time is frequently great, and the horses stalk and puddle the ground to an injurious extent. We are now trying the experiment of spade digging.

Grass demand.—Last year the grass was almost unsaleable, as the greatest possible prejudice existed against the use of sewage grass. The prejudice has fled in the face of experience; the demand this year has been quite equal to the supply. Prices varied from 12*s.* to 16*s.* per ton. We cut the grass ourselves, and allow carts to go on the fields when possible; otherwise we convey it to the roads.

The field of old pasture, 12 acres, is ridge and furrow, with considerable fall on one side; it has been brought under irrigation.

The May crop was sold off in June, realizing 4*l.* 17*s.* 6*d.* per acre; since then I have cut an aftermath for 30*l.*, and a second aftermath is forward.

Exclusive of loss in rental the cost of laying out the farm has been about 10*l.* per acre. Little or nothing has been done to the roads, which are in a bad state; to put them into working order would cost at least 5*l.* per acre.

There is a brook running round two sides of the farm, into which the drainage of the surrounding land falls; we are not allowed to use the brook or any of the ditches that drain into it, therefore we have a catch drain surrounding the farm which conveys our drainage to the outfall, when it passes under the brook by two 16-inch pipes acting as syphons; it then runs down common watercourses into the Avon three-quarters of a mile distant. Being on clay our effluent discharge is large.

We have grown a few beans and potatoes, which have done well. Virtually the farm is in grass, and we shall continue it, as no other crop is of so little trouble and pays so well when the demand is good, as with us at present. We purpose laying out three acres with mangolds next season. The sewage of about 2,050 houses mixed with about 600,000 gallons of water comes into the farm.

The delivery of sewage is very unequal, falling as low as 400,000 gallons daily in very dry weather, and rising over a million and a half of gallons daily in very wet weather. Everything is pumped up and the sewers flushed twice a week; when this is done the sewage is pumped direct from the sewers, passing by iron pipes under the bed of the reservoir to the pumping well.

Most people anticipated nuisance from the working of the farm; for a time some fancied there was, but truth has convinced everyone now that a sewage farm is no nuisance, that it creates in fact less nuisance than often arises on an ordinary farm when manuring the land; sewage fresh and fresh has at the worst but the aroma of cabbage water, and in that state is harmless; when allowed to stand for 24 hours decomposition sets in and noxious gases are given off, especially sulphuretted hydrogen, the presence of which may be known by the smell of rotten eggs, so common in the lanes and gullies of Calcutta.

The marvellous effects of sewage on land in developing its productive powers is shown in the fact of its giving six and seven crops of grass in a climate like ours, where only one could be had without it; sewage holds in solution and suspension the constituents necessary for the growth of the plant; water is the vehicle of supply. When a crop is cut the constituents are returned to the land and a fresh crop springs up. In the climate of India, which I know very well, after 27 years' sojourn there, I should anticipate marvellous results from the skilful application of the sewage to the land. In the natives themselves you have skilled irrigators; but I should imagine that their religious prejudices would prevent them from applying sewage to their own crops, but this would yield in time, when they saw the wonderful results. Whether rice will stand sewage treatment will need experience to decide; to some extent it certainly would, if not to that of rye grass, which is a gross feeder and will take "any quantity" of sewage without injury. At all events the land could be treated with sewage for the next crop, and thus the area of its usefulness would be largely extended.

The application of sewage to all crops has been satisfactorily demonstrated. That it can be usefully and profitably so employed in India I am as certain as I am of my own identity; time, experience, patience, and skill are required, and these we can command to carry the measure to a successful issue. One has but to see the Warwick farm to see how readily it is done, and how satisfactorily and successfully sewage irrigation works.

The Warwick waterworks were carried out the same time as the drainage works. The water drawn from the river Avon flows through an earthenware pipe 18 in. diameter into a settling tank 100 ft. long by 50 ft. 6 in. broad at top, sloping down to 60 ft. long by 36 ft. broad at bottom.

Here the floating impurities are arrested and the water flows into two filtering beds, one being 100 ft. long by 78 ft. broad at top, sloping down to 66 ft. long by 44 ft. broad at bottom; second, 110 ft. long by 88 ft. broad at top, sloping down to 78 ft. long by 46 ft. broad at bottom.

Down the centre of each bed runs a pipe with five cross branches; the water entering at the top filters through sand, 12 in.; fine gravel, 6 in.; coarse gravel, 3 ft.; large stones, 18 in.

The filtered water passes to a well, from whence it is pumped by an engine a distance of 1¼ mile to a service reservoir in the town, a height of 128 ft. from the bottom of pumping well.

The main is 12 in. House connections for drinking purposes are laid direct from pumping main. The supply is intermittent, but the pumps are in action from 6 a.m. to 9 p.m. The corporation insist on having one of Messrs. Guest and Chrime's water-waste preventers fixed to every closet, because the water by them is economized, and a better flush is secured. Lambert's screw

taps are used in the houses. About 56,000 gallons are kept in the reservoir on the top of the water tower, which is 70 feet in height, in case of fire. The average daily supply amounts to 310,000 gallons.

The cost of the execution of the drainage and water supply works amounted to 25,000*l.* This sum was raised by a mortgage of the general district rates (3*s.* in the 1*l.*), and is repayable (principal and interest at 4¼ per cent.) by 30 annual instalments. This loan was advanced by an insurance company.

This loan of 25,000*l.* does not include the cost of the sewage farm, which amounted to 11,000*l.* in addition, which was raised by mortgage of same rate at 4½ per cent. interest, repayable in same number of years.

COVENTRY.

The following information is gathered from a memorandum supplied to me by the borough surveyor, E. J. Purnell, Esq., and I have also made extracts from the Municipal Corporations' Directory.

The town of Coventry is an important manufacturing city in Warwickshire; the manufactures include silk fabrics and ribbons, lace, carpets, watches, and machinery.

The Public Health Act was supplied in the year 1849.

Statistics:—Population estimated at 42,000; inhabited houses, 10,400; rateable value, 99,664*l.*; acreage, 1,660 acres, of which 600 are built upon; number of streets, 171; length of streets, 27 miles; average annual mortality for the 10 years 1851–1860, 25 per 1,000. The sewerage carries off both rainfall and sewage. The main sewer is about two miles long, and varies in size from 3 ft. 6 in. by 2 ft. 6 in. to 4 ft. by 3 ft. at outfall; it is built of brick, egg-shaped, invert set in cement; four or five miles of the subsidiary sewers are glazed earthenware pipes from 6 in. to 12 in. in diameter; the number of waterclosets is 3,813, but many of these are double, making the aggregate nearly 5,000; there are numerous cesspools in the town. The main sewers and subsidiary drains are flushed by perpendicular shafts charged with water from the nearest hydrant.

The sewers are ventilated principally by down spouts, there being 1,230 connected in the town.

Total cost of sewers, 35,000*l.*; this includes 6,000*l.* for constructing works, purchase of water power, etc. The main sewer cost per yard about 23*s.*

The outlet of the sewers is distant about a mile from the town, and by it the sewage is conducted to the tanks, which are in duplicate.

The tanks are brickwork, enclosures divided on either side into two partitions, each communicating with a central drain. They are 124 ft. long, and the first tank is 18 ft. broad, the second 9 ft., and the central drain 6 ft.; they are 14 ft. deep. Between No. 1 and No. 2 tank, and between No 2. and the central drain, are filter beds which are enclosed by perforated planks of wood 7 ft. 6 in. high. The filter beds consist of large stones at the top, gradually diminishing in size until there is a layer of coarse gravel at the bottom.

The sewage water entering No. 1 tank filters through the first filter bed into No. 2 tank, and any solid matter which may pass through No. 1 filter bed is arrested by No. 2; after passing through it escapes into the central drain, by which it is conducted through a culvert into the river Sherborne. About 1,800,000 gallons per day passes through the tanks.

The tanks are covered by brick arches, and over each tank are five iron gratings, over which a travelling crane runs upon rails; to this is attached a bucket holding about 28 gallons. The tanks are cleaned out once a month, and the solid matter at the bottom is run into beds formed by street sweepings, with which it is covered and mixed, and sold for about 2*s.* a ton. About 1,440 tons of solid matter are thus intercepted during the year. The site on which these works stand covers 4,450 square yards.

The sewage tanks, including 4½ acres of land and 1,100 feet of inlet sewer, cost 4,320*l.* The annual expenses of the sewage works amounts to 140*l.* Amount received for manure in 1868, 120*l.*

In Coventry there are about six large dyeworks, and although most of the solid matter is intercepted as explained above, the sewage runs away as a black inky fluid, and perfectly discolours the stream.

Just before the sewage is discharged into the river, it is occasionally intercepted and allowed to flow over about 14 acres of land, about 4 acres of which are sown with rye grass, and 10 with common English grasses.

	£	*s.*	*d.*	£	*s.*	*d.*
In 1868, from the 4-acre field, the crop fetched	35	0	0			
The aftermath, or joist	15	0	0			
				50	0	0
From the 10 acres there were three crops of hay	180	10	0			
The feeding off	15	0	0			
				195	10	0
Total				£245	10	0

268 acres have been purchased on high ground sloping down to the river for 27,000*l.*, and are about to be laid out for sewage irrigation. For these the sewage will have to be pumped up to the highest level.

The waterworks at Coventry were erected by the corporation under a special Act in 1846. They cost 33,000*l.*; the money was borrowed by mortgage at 4 per cent.; annual working expenses, 2,700*l.* to 2,900*l.*; profit, from 700*l.* to 900*l.*

The supply is obtained from the following sources:—

1st. From a spring at Radford, the water of which is conveyed for about a mile to the filter beds.

2nd. From a land-spring from the gardens at the north-west of the town, about one quarter of a mile distant. Both the above are surface-springs, and are dry during summer.

3rd. From a small brook called the Barley Brook, which flows from Radford; the water from this is let in by a sluice into a filter bed composed of sand 22 in., fine and coarse gravel and stones 24 in.; below are cross drains which carry the water to a centre drain, through which the filtered water passes into a collecting tank.

4th. From artesian wells sunk into the new red sandstone; these are four in number, 1st is 300 ft. deep; 2nd is 250 ft. deep; 3rd is 75 ft. deep; 4th is 75 ft. deep; these discharge direct into the collecting tank, which is circular in shape, 100 ft. diameter by 15 ft. deep; at 14 ft. 4 in. the water overflows into the river Sherbourne.

The suction pipe, cast-iron, 2 ft. diameter, dips into the collecting tank to within 11 ins. of the bottom. There is a wall about 3 ft. high, built about 18 in. from the suction pipe, to protect it from weeds, and especially from the silk weed, which is very troublesome, and grows with great rapidity in the tank, which is open; the American weed also grows in the tank, but is not objected to.

The water is pumped up by two beam, double action, double cylinder engines; one is 60-horse power, the other of 40-horse power. The 60-horse power one drives about 63 gallons a stroke, and about 1,000 strokes per hour. The water passes first through an air vessel and then through a 14-in. iron main into the town. There is also an air vessel over the suction pipe. The pumps are kept in action for about 12 hours.

The water passes by the mains through the town and supplies it in its passage; the surplus is pumped up to a service reservoir built on Barr's Hill, Radford, distant about a mile from the works, and situated 100 feet higher, and over a stand-pipe 40 feet high, making a pumping lift of 140 feet. The average daily supply is about 700,000 gallons. The number of fire-plugs is 109; hydrants, 294; standposts, houses supplied, 7,364; waterclosets, 3,813; meters, chiefly Kennedy's, 66; public wells and pumps, 21.

The waterworks stand on four acres of land, and there are six boilers altogether, though only two are used for each pump; these are fitted with Hulton's smoke burners. There are also public baths belonging to the corporation, built at a cost of 5,325*l*. They are kept open at an annual loss.

RUGBY.

The following statement is compiled from information kindly afforded me by I. M. Wratislaw, Esq., town clerk, and J. E. Palmer, Esq., town surveyor.

The population of Rugby, according to the census of 1861, amounted to 7,818, but is now (1869) estimated to have reached about 9,000. The area of the parish is 1,600 acres, and there are estimated to be about 1,500 houses. The main sewers carry off both the rainfall and sewage; they consist of glazed earthenware pipes, varying in size from 2 ft. at the outfall to 9 ins., and extend over about five or six miles.

Water from the hydrants is used for flushing these, and they are ventilated through charcoal trays into the street at the manholes, Nearly all the houses are fitted with waterclosets, which are connected with the sewers by pipes, varying in size from 4 ins. to 6 ins. The waterclosets are syphon trapped. The sink connexions, 3 ins. in diameter, are well trapped.

Ashes and dry refuse are collected in the back yards of houses in covered ashpits, about 4 ft. by 3 ft., and 3 ft. or 4 ft. deep. The owners make arrangements to have these pits cleansed, but there is no systematic inspection by the local authorities whether they are done so or not.

The sewage flows by gravitation through a high and a low level sewer to the farm, which is situated about a mile from the town. There are 58 acres on the farm, 40 acres of which are irrigated by the high level sewer, and the remainder by the low level.

At the high level inlet the sewage is received into a diverting well, from which it flows into one of two depositing tanks which are open, and in which are fixed double strainers made of perforated wooden planks. The solid matter is arrested and is deposited, while the liquid sewage flows out through a 15-in. earthenware pipe into the main carrier.

Each deposit tank is used in turn, and is periodically (about once a month) cleaned out, and the solid matter removed and covered over with refuse from the carriers, and used as manure.

The main carrier is simply an earth trench, with a fall of 1 ft. in 200 ft.; smaller ones with falls varying from 1 ft. in 600 ft. to 1 ft. in 1,000 ft. communicate with it.

The main carrier is 2 ft. 6 ins. broad at the top, tapering down to 1 ft. at the bottom; it is 18 ins. deep. This is considered to be unnecessarily large, and one of 2 ft. broad at top, 9 ins. at bottom, and 1 ft. deep, would be preferred.

At intervals, depending on the nature of the ground, are wooden sluices let into brick wall sides.

The principal crop is Italian rye grass, though some mangold is planted. A crop of rye grass takes on an average a month or six weeks to grow. Afrer cutting, the ground is saturated with sewage for three or four days; this of course varies with the amount of rainfall.

The sewage from the low level is obliged from the nature of the ground to be allowed to flow over growing crops, but they are none the better for it.

The effluent water passes off the land into the Avon, two miles below the source of drinking water supply to the town, but during the summer the land absorbs all the water.

The land in which rye grass has been sown must be ploughed up and sown in with fresh seed every third year; but it is advised that a crop of roots should be sown instead of rye grass every fourth year.

The sewage irrigation works cost 4,700*l*. The first year's receipts were 350*l*., though only a portion of the land was brought under cultivation. The money was raised on mortgage of rates at 4½ per cent. interest; principal and interest to be repaid by yearly instalments in 30 years.

Rugby Waterworks.—There are two sources of supply, the principal one being from rainwater, which is collected in a rural district over an area of about 700 to 800 acres. The water so collected

flows from numerous points through earthenware pipes, gravitating by a central main to a covered reservoir, situated at about a mile's distance from the town; this reservoir holds about 150,000 gallons. The water is pumped from this reservoir by a 15-horse power horizontal engine, to a tank holding about 50,000 gallons, on the top of a water tower 75 feet high; it thence flows through an iron 9-in. main to the town by gravity; it is laid on to nearly all the houses.

The pipes for drinking water purposes are connected direct with the main, but as the supply is intermittent there are cisterns made of either iron or lead; water-waste preventers are not used. The above supply runs short during the hot weather, and is reduced to less than 35,000 gallons per day.

The subsidiary supply is obtained from the river Avon about a mile from the town; this flows into a well from which it is pumped into a settling reservoir, holding about 2,500,000 gallons.

The mechanical impurities are deposited, and the supernatant water flows into filter beds, of which there are two, each being about 40 feet long by 35 feet wide.

The filtering medium is composed of,—fine sand, 6 ins.; magnetic carbide of iron and sand, 6 ins.; medium sand, 9 ins.; coarsest sand, 4 ins.; gravel—size of peas, 4 ins.; size of beans, 4 ins.; size of walnuts, 6 ins.; size of eggs, 4 ins.

The water, after passing through the above, escapes by brick drains to a central drain, from which it is conducted through an iron sliding tube into an open filtered water reservoir, holding about 70,000 gallons, and from thence it is pumped by the same engine to the water tower twice a day; from the water tower it flows through the same mains at the upper works into the town.

The height pumped is 108 feet; the pumps are in action about 12 hours per day, and about 180,000 to 190,000 gallons are pumped during that time.

BEDFORD.

The following statement has been compiled from information kindly given me by the local authorities. Extracts have also been made from the Municipal Corporations' Directory.

The town lies on both sides of the river Ouse. The Bedford Level was reclaimed by drainage from being a salt marsh, and a great trade is carried on in corn and other grain. Malt, coal, iron, and timber are considerable items of commerce, carried on by the means of the river, which is navigable to the German Ocean. Lace making affords employment to great numbers of women and children, and there is in the town one of the largest agricultural implement manufactories in the kingdom.

Population, 1869, (estimated) 16,000; area of borough, 1,962 acres; area sewered, 1,000 acres; number of houses, 3,400.

There are very few cesspools in Bedford; the number that do exist is supposed not to exceed 150.

Works of main drainage have been executed at a cost of 18,000*l.*; they are on the separate system, the storm water flowing to the river. There are two lines of main sewers, a high and low level; both discharge by gravitation to pumping station a mile from the town.

The main sewers are constructed of brick, and are egg-shaped; at the outfall the size is 4 ft. by 2 ft. 8 ins. The smallest size of brick sewer is 2 ft. by 1 ft. 8 ins. The subsidiary earthenware pipes range from 1 ft. 6 ins. to 1 ft. 3 ins. There are 2,464 waterclosets connected with the sewer by 9-in. or 6-in. pipes fitted with syphon traps.

The drains from the sinks, which are syphon-trapped, are on the outside of the walls of houses.

The sewers are flushed at their extreme ends from hydrants, through 3-in. pipes.

There are 90 special ventilating shafts, of 3 ins. or 4 ins. diameter, running up from the crown of the sewers to the top of chimney stacks.

There are manholes at the junction of each street, which are fitted with charcoal ventilators; and the rain-water pipes are also connected with the sewers, when they do not open near the windows of houses.

The soil is gravel and sand on the south side of the river; limestone and clay on the north.

The main sewer from the high level is laid under an embankment reclaimed from the river and about a mile long. The sewage from the low level on the south side of the river, receiving the sewage of about 1,000 houses, passes by an iron pipe 15 ins. in diameter under the river and joins the main outlet. The main sewer flows into a brick tank, 12 ft. by 6 ft. deep; at about 2 ft. from the outlet, and extending across the tank, is an iron grating 6 ft. high, the bars of which are about a quarter of an inch apart; by this grating the paper and solid matter are retained. The sewage then flows into a tank about 30 ft. by 12 ft., and 12 ft. deep, half way down which is a culvert which leads to a centrifugal pump by which the sewage is lifted into a cast-iron cylinder $1\frac{1}{2}$ ins. thick, 6 ft. diameter, and 15 ft. high, from which it flows by gravitation over the land, being conducted to it, for a distance of about half a mile, through an iron pipe 1 ft. 6 ins. in diameter.

Around the pumping station is a garden, in which there were at the time of my visit growing beet-root, broccoli, asparagus, onions, lucerne, white turnips, &c. The sewage flows in this garden through earthen trenches, and is applied at intervals, perhaps of a week, to these crops for a day or two.

The sewage flows on to the farm from the cylinder through a pipe into a supply well, and thence through earthenware pipes carried along the highest ridge, from which earthenware carriers are laid at intervals of 60 or 70 yards. The sewage flows irregularly over the ground, as the land was not in the first instance properly levelled.

The farm contains 50 acres, 37 of which are laid out in rye grass, 10 in mangold wurzel and cold rabbi, and 3 in wheat.

A crop of rye grass takes about six weeks to grow. After cutting, the sewage is allowed to flow over the field for three or four days, according to the state of the weather; no sewage is then allowed on for another week, when it is again applied. It should be applied three or four times during the growth of the crop. Rye grass sells for from 4*l.* to 8*l.* per acre. The field of mangold I saw growing in September was planted in April; it was irrigated about a month after sowing,

and once every fortnight since; it is intended to be pulled in October, and then the ground will be soaked with sewage during the winter, and early in the spring seeded down with rye grass. About 350,000 gallons were being pumped over the land in September, when the pumps were in action about five hours each day; 600,000 gallons can be pumped in the 24 hours. When the pumps are not in action, a sluice is shut at the outlet, and the sewage is ponded back in the main sewer for about a mile.

The effluent water finds it way through various ditches into the river, about 1½ miles below the town.

Bedford Waterworks.—Established 1868. Supply from an artesian well sunk in the limestone rock. The well is 14 ft. deep, and the boring 18 ft. into the rock. This yields 205,440 gallons a day, which are pumped by a beam engine into a reservoir, capable of holding 800,000 gallons. The reservoir is situated about a quarter of a mile from the well, which is in a hollow, and about a mile and a half from the town; the water is lifted about 160 ft. into a reservoir, and then is conducted by iron mains 1 ft. diameter into the town. The supply is on the constant system. All waterclosets are fitted with water-waste preventers, holding 3½ gallons, after the pattern made by Messrs. Guest and Chrimes. The waterclosets are fitted with Doulton's, of Lambeth, pans.

The waterworks, including sewerage embankment, cost 23,000*l.*

LEICESTER.

The following statement has been compiled from information kindly given me by E. L. Stephens, Esq., the borough engineer, and from extracts from the Municipal Corporations' Directory.

Leicester is the centre of the worsted hosiery manufacture, which is the staple trade of the town, along with lace, sewing cotton, wool combing, worsted spinning, &c.

Population estimated at 90,000; area of borough, 3,000 acres; area of district sewered, 1,200 acres; number of houses, 20,000.

The sewers, which carry off both storm water and sewage, formerly discharged into the river Soar, at the nearest points; an intercepting sewer has since been built, with which the sewer from the west side of the Soar communicates in its passage to the sewage works, which are situated on land adjoining the abbey, on the north side of the Soar. The main sewers are built of bricks, are circular in form, and vary in size from 2 ft. 6 ins. to 5 ft.

Flushing is effected by pipes from the hydrants, and from movable tanks large enough to hold about 1,080 gallons, which are suddenly discharged into the sewer. It is calculated that about a million gallons of water are used during the quarter in flushing the sewers.

The method of ventilation adopted is to connect the sewers with the engine shafts of different manufactories. There are now (1869) 25 such connexions. The rain-water pipes also communicate direct with the sewer, and ventilation is effected through them.

There are only about 6,000 waterclosets in the town, but on cottage property there is on an average only one watercloset for every four cottages. The size of the watercloset connexions varies from 6 ins. to 9 ins.; they are all syphon trapped. The sinks are situated outside the houses and communicate by a short drain, which is furnished with a trap, with the main sewer.

Middens or ash privies are numerous throughout the town; they are estimated to amount to between 3,000 and 4,000; these are also connected with the sewers, so that the watery matter finds its way into them; the solid matter, consisting of nightsoil and ashes, remains, and is removed on an average once in six months.

The construction of the sewers is estimated to have cost 40,000*l.*

The Sewage Works.—The sewage flows through a barrel culvert, 4 ft. 6 ins. in diameter, into two wells, each 7 ft. by 11 ft., and 12 ft. deep, from which it is pumped up 20 ft. into reservoirs, which are 200 ft. long, 45 ft. broad, and 14 ft. deep. The reservoirs on section are triangular in shape, and so constructed that the gutter is in the centre.

The engines used for pumping are two Cornish engines, which consume about 20 tons of coal during a week in lifting about 35 million gallons of sewage; they are each in action for about 12 hours per day.

In its passage from the supply well the sewage receives and is intimately mixed with a solution of lime, of the strength of one ton of lime to a million gallons of water. The sewage and lime then pass slowly over the reservoir, where the lime precipitates the solid matter.

The effluent water from the reservoir passes over a weir into the river Soar, which soon after joins the Grand Junction Canal.

The reservoirs are in duplicate, and the sewage flows into one whilst the other is being emptied. This occurs about once a month, when the sludge at the bottom is lifted and run down into earth-embanked beds, where it is allowed to remain for two or three years to consolidate. It is then sold for 1*s.* a cartload, as manure.

The sewage works cost 25,000*l.*; the yearly expenses of working them amounts to 1,300*l.*, from which must be deducted, sale of manure, 300*l.*; leaving 1,000*l.* as the expense of working them.

The water supply of Leicester is under a private company. Two brooks, the Thornton and Carr, are impounded and the water is collected into a reservoir, which holds 365 million gallons. The water passes through four filter beds, and is brought down 10 miles by an iron 24-inch main to the service reservoir, which is 100 feet lower than the main reservoir. The service reservoir is situated a mile from the town, and is about 90 feet above it. Ths water is distributed through about 25 miles of pipes, and is on the constant supply system. There are about 14,000 connexions. No cisterns are allowed in houses except for waterclosets, when they are compulsory; each service cistern holds about two gallons. Messrs. Stock Brothers, and Taylor's taps are recommended to be used, but Messrs. Guest and Chrimes' taps are permitted. About 21 gallons per head per day are supplied. These waterworks cost about 90,000*l.*

The death-rate for the year 1868 is stated to have been 27·855 per 1,000.

BIRMINGHAM.

The following statement has been compiled from information kindly given me by W. Till, Esq., borough surveyor, J. W. Gray, Esq., the engineer to the Birmingham Waterworks Company, and also from some extracts from the Municipal Corporations' Directory.

Birmingham is the great centre of hardware manufacture for England and the world, every description of hardware, from the most ponderous steam engines to the smallest piece of jewellery, being made here.

Population by census of 1861, 296,076; 1869, estimated 360,000; inhabited houses by census, 1861, 59,060; by estimate, 1869, 70,000; estimated number of electors, 43,000; burgesses, 47,000; gross estimated rental, about 1,260,000*l.*; rateable value, 1,052,796*l.* 19*s.* 9*d.*; area of borough, 8,420 acres; area sewered, 7,320.

The Main Drainage Works.—The length of sewers at present constructed amounts to 97 miles, leaving 36 miles still to be made by the council. The cost, including compensation of land, amounts to 200,000*l.*

They consist of egg-shaped brick sewers and circular pipes, varying in size from 5 ft. 9 ins. by 3 ft. 6 ins. down to 12-in. pipes. The main sewers are ventilated by shafts from their sources to the surface of the roads, and are flushed by gates fixed in them, and from shafts at dead ends.

The house connexions are 9-in. and 6-in. pipes, with 4-in. soil pipes. The proportion of waterclosets is very small, and every house almost has its privy and ashpit.

The scavengering was formerly let to a contractor, who failed to perform the work satisfactorily, and it is now done by the corporation.

Outlet Works.—The sewage flows down by two egg-shaped mains, 5 ft. 9 ins. by 4 ins. Their contents are received into a large culvert, which at either end has seven arches, and which forms the side of two depositing tanks, which are 330 ft. long, 90 ft. broad, and 6½ ft. deep. The tanks are in duplicate, to allow of one being used whilst the other is being cleaned.

Each depositing tank is divided into three sections; the sewage is allowed to flow into one tank for 14 days; it is then diverted into the other whilst the full one is being cleaned; all the supernatant water is allowed to run off, and the mud and sludge deposited at the bottom is lifted about 14 feet by a 13-horse power engine, and run down into a depositing ground, which covers about 7 acres, to a depth of about 4 feet. It remains on this ground for about a year, until it has become sufficiently consolidated for removal, but is covered over with gypsum, to prevent smell, at an annual cost of 100*l.* About 42,000 cubic yards are removed from the tanks during the year.

13,615 tons of sewage manure were disposed of during the year 1867, and were sold for 9*d.* per ton. The charge for the manure at the works is 1*s.* per cart, 2*s.* 6*d.* per waggon, and 29*s.* per boat load.

The Birmingham and Fazely Canal adjoins the works.

25,000*l.* were expended in construction of the works, purchase of land, etc., etc., and about 2,000*l.* is the annual cost of maintenance.

The effluent water runs into the river Thames.

Experimental Farm at Outlet.—Mr. Till's report, 1868. About 50 acres of land belonging to the council were double dug, levelled, and the necessary road carriers constructed so as to allow of the same being seeded down with Italian rye grass prior to July last, whilst six acres, on which the liquid sewage cannot be conveyed without pumping, have been planted with mangold and other experimental crops, such as clover, celery, cow-cabbages, swedes, turnips, etc.; but owing to the lateness of the time of planting and the excessive heat the crops were not large.

The remainder of the meadow land was irrigated with the sewage several times during the season, and let out to cowkeepers.

The amount received for sale of rye grass was 314*l.* 9*s.* 3*d.*; for hay for cattle, 517*l.* 1*s.* 11*d.*, and for barley, oats, mangold, etc., 142*l.* 10*s.* 11*d.*, making a total of 973*l.* 14*s.* 1*d.*

The water supply of Birmingham is in the hands of a private company. Source of supply, rive Tame and its tributaries; also some artesian wells. The water flows and is pumped into two reservoirs at Aston. The two reservoirs are capable of holding 50 million gallons of water, and from them it is pumped by six steam beam engines (two Cornish, two Baldwin, and two fly-wheel) through two 22-inch mains, to a service reservoir 265 feet above level of pumping well, capable of holding about six or seven million gallons, and which is three and a half miles from pumps. From this reservoir a portion is pumped to another reservoir, distant about three-quarters of a mile, and 80 feet higher, which supplies the highest levels. The supply is constant, the pipes being always charged. Waterclosets are supplied from cisterns (Dale's patent), holding about two gallons. House connexions are filled with Guest and Chrimes' half-inch screw valve taps. About 8,000,000 are supplied daily.

Chessire's Intercepting Tanks.—At Birmingham I likewise saw in operation Mr. Chessire's intercepting tank.

The box is 2 ft. 4 in. long, 18 in. wide, 18 in. deep. The pipe from the privy or closet, having a syphon trap above it, passes into the top of the box at the opposite corner to the outlet pipe, which, placed at the bottom of the box, is divided from the main part by a perforated grating, extending across the corner and the whole height of the box. The lid is sealed with putty, and the outlet pipe is also trapped with a syphon trap. All the water, urine, etc., runs away to the sewer, the solid matter, paper, etc. being retained, to be periodically removed. This appears to be a better form of cesspool, and may be worth trying in places that have no regular system of drainage.

LIVERPOOL.

I am indebted for the following statement to the kindness of James Newlands, Esq., the borough engineer.

The area of the borough is 5,210 acres, of which there are occupied by buildings, 4,148 acres 2 roods 23 perches 725 yards, and unoccupied, 1,061 acres 3 roods 16 perches 23 yards. The length of streets is 221 miles; of passages, 90 miles. The length of street sewers is 189 miles 340 yards; passage sewers, 90 miles. The number of houses in the borough at the last census was:—

Inhabited	65,781
Uninhabited	5,197
Total	70,978
The number of houses since built, to December 1868, is	12,772
Making the total	83,750
But railways and town improvements have in that time demolished a number, which may be estimated at	1,359
Making the probable total number of houses	82,391
The population at the last census was	443,938
Corrected for increase to this date (Sept. 1869), is now estimated by the Registrar General	509,052

The rateable value of the borough is 2,412,672*l.*

The water supply is obtained from four wells in and about Liverpool, which yielded, in 1868, 2,085,088,693 gallons; and from Rivington Pike, which has a watershed of 10,000 acres, and store reservoirs, which forms spacious lakes upwards of six miles in length, with an average storage of 3,180 millions of gallons, and from which were delivered in 1868, 3,436,922,208 gallons, making the total quantity supplied to the borough and the district traversed by the pipes in that year, 5,522,010,901 gallons.

The population of the district of water supply is estimated at 600,000.

The annual consumption per head for domestic purposes was, in 1868, 2,438 gallons. The mean annual rainfall from 1848 to 1868 was 46·053 inches. The maximum was 61·70 inches in 1852; the minimum was 34·80 inches in 1865.

The watercloset system is general, and will soon become universal. In the last five years, 15,000 privies were converted into waterclosets, and the work is steadily proceeding.

The quantity of sewage estimated to be discharged from all the sewers of the borough is 2,100,000 cubic feet, or 18,125,000 gallons in the 24 hours, say in round numbers 60,000 tons.

The annual rainfall in Liverpool may be taken at 35 inches, which would give 1,809,504 cubic feet in 24 hours, an amount nearly equal to the sewage proper.

Ventilation of Sewers and Drains.—In addition to the ordinary ventilation through untrapped drop-spouts, which has been the constant practice for the last 21 years, there has of late been an immense extension of ventilation by means of the Archimedean screw ventilator. Of these ventilators, 1,030 have been erected and are now at work throughout the borough.

High chimneys, furnaces, &c., in the line of sewers, are also connected witn the sewers.

The utilization of the sewage of one outlet is being experimented with by a company.

The test works consists of a pumping station at Sandhills, with an engine capable of lifting 500,000 gallons 125 feet high in 24 hours; of about nine miles of cast-iron piping, 9 inches in diameter, extending from the station northwards to the Blundell estate. The 9-inch pipe is provided with proper connexions for delivering the sewage along its course. It terminates in a distributary pipe, carried through a piece of land containing 43 acres 1 rood 33¾ perches, which has been taken on a lease by the company.

Scavengering.—Report of the superintendent of the scavengering department for 1867 :—

The general scavengering, and the cleansing of middens and ashpits and everything connected therewith, was effected during 1867 at an actual gross expenditure of 65,010*l.* The average strength of the staff employed on the scavenging day and night service has been—

——	Day.	Night.	Total.
Inspectors	14	8	22
Trough closets and urinal men	39	—	39
Scavengers	438	—	438
Night men	—	106	106
Ashpit men	40	—	40
Carters	77	80	157
Stable and wharf men	30	20	50
Total men	638	214	853
Horses	80	80	160

As regards the results of the work done by the scavenging staff in the cleansing and emptying of middens and ashpits, the sweeping of the streets, attention to urinals and trough waterclosets, and the removal of all nightsoil, ashes, and scavenging products, they are represented by the following statement:—

Number of Tons removed.

——	Daily.	Weekly.	Total for the Year.
Night service, contents of middens and ashpits	446	2,669	138,777
Day service, street sweepings, &c.	328	1,963	102,065
	774	4,632	240,842

I was also favoured with copies of the admirable reports of Dr. Trench, the Medical Officer of Health, from which I have extracted the following statements, which will show how vigorously sanitation is carried in Liverpool.

The death rate of the borough of Liverpool in 1868 was equal to 29·1 per 1,000 of the estimated population.

The average death rate of the borough during the previous 10 years (1858 to 1867) was 32·2 per 1,000, or 3·1 per 1,000 more than in 1868. This is equivalent to a decrease of 1,552 in the number of deaths relatively to the population, or in other words, it may be regarded as a saving of 1,552 human lives, when compared with the mortality of the previous decennial period.

The Registrar General's weekly reports enable us to compare the mortality of Liverpool with 13 of the large towns of Great Britain, but though such comparisons are desirable as incentives to sanitary improvements, they will lead to very fallacious conclusions, if at the same time due weight be not given to the moral, physical, and economical conditions of the inhabitants. The amount of pauperism, of Irish immigration, and of unskilled labour in Liverpool, is far greater than in any other town in the kingdom, and no zeal in sanitary legislation can succeed in placing an indigent population in the favourable conditions of health attainable by towns whose labourers have constant work, and are in receipt of remunerative wages; the density of population is also a physical condition which ought to be duly considered in every comparison of the results of sanitary work, and as this can be shown directly, it has been included in two of the columns of the following table:—

	Estimated Population in the middle of the Year 1868.	Births in 52 weeks ending Dec. 26, 1868.	Deaths in 52 weeks ending Dec. 26, 1868.	Annual Rate to 1,000 of Population.		Area in Acres.	Population on Acre.
				Births.	Deaths.		
London	3,126,635	113,239	73,279	36·2	23·4	77,997	40·0
Bristol	167,487	6,057	3,800	36·1	22·7	4,676	35·8
Birmingham	352,296	12,689	8,394	36·0	23·8	7,831	45·0
Manchester	366,835	13,793	11,742	37·6	32·0	4,069	90·1
Salford	117,162	4,629	3,592	39·5	30·7	5,009	23·4
Sheffield	232,362	9,103	6,188	39·1	26·6	22,830	10·2
Bradford	134,000	4,931	3,537	36·7	26·4	6,590	20·3
Leeds	246,851	10,190	6,725	41·2	27·3	19,221	12·8
Newcastle-on-Tyne	127,701	4,860	3,232	38·0	25·3	5,336	23·9
Hull	122,628	4,243	2,984	34·6	24·3	3,621	33·8
Edinburgh	177,039	6,601	4,736	37·3	26·7	4,191	42·2
Glasgow	449,868	18,439	13,680	40·9	30·4	5,691	77·7
Liverpool	500,676	19,341	14,583	38·6	29·1	5,210	96·1

There are two disinfecting establishments in Liverpool where clothes and bedding are gratuitously disinfected; the number of articles sent to them during 1867 amounted to 16,639.

Slaughter-house return of cattle killed in the borough:—

Beasts.	Sheep.	Lambs.	Calves.	Pigs.	Goats.
49,331	281,015	20,889	13,681	32,474	41

Unwholesome meat condemned during 1868:—

Beef. lbs.	Veal. lbs.	Mutton. lbs.	Lamb. lbs.	Pork. lbs.
80,927	21,551	14,466	706	5,385

Poultry. head.	Rabbits. head.	Fish. lbs.	Shell-fish. bags.	Oysters. number.
1,360	1,639	375,626	384	22,100

Inspector of Nuisances reports during 1868:—

Complaints of nuisances made by inhabitants	1,953
Total number of nuisances reported by district officers	40,601
Total nuisance notices	27,799
Number of informations	818
Number fined	165
Number withdrawn and acquitted	623
Magistrates' order	29

Fever in houses:—

1,283 street houses examined, contained 2,172 cases of fever.
667 court „ „ „ 1,216 „
76 cellars „ „ „ 80 „

Total number of cellars inspected, 66,284.

Proceedings:—

Number of cellar notices	3,068
„ „ informations	361
„ „ fines	251
„ „ „ acquitted and withdrawn	103

House to house visitation during 1868:—

Total number of houses examined	131,101
Notices to white-wash houses	27,603

Fines inflicted for 1868:—

	£	s.	d.
Nuisances - - - - -	- 87	18	2
Diseased meat and slaughter-houses - -	- 17	2	0
Cellars - - - - - -	- 26	3	6
White-washing - - - - -	- 31	2	6
Total - - -	£162	6	2

PRESTON.

The following statement is compiled from information kindly given me by R. Ascroft, Esq., town clerk, and by E. Garlick, Esq., borough engineer, and from extracts from the Municipal Corporations' Directory.

The town is situated on the banks of the river Ribble. It is connected by railways with all parts of England, and with the coast towns and manufacturing districts of Lancashire and Yorkshire by the navigable river Ribble and the Lancaster Canal.

The chief trade is the manufacture of cotton fabrics; there are also iron foundries and machine works, and a small amount of shipping trade. Population is estimated at 97,000 persons, who reside in 17,241 houses. Its rateable value is 210,000*l.*; the area of the borough is 2,819 acres.

Main drainage works have been executed at a cost of about 50,000*l.* The main sewers extend for 25 miles, and there are 30 miles of sewers connected with them, paid for by owners. The large main sewers are brick and circular in shape, and the smaller ones brick, but egg-shaped. These brick sewers extend for 8¾ miles; the remainder are made by stoneware pipes.

The sewers are ventilated through charcoal boxes and gratings into the street, and also through the down spouts, and are flushed by water laid on direct from the mains. All the houses are furnished with waterclosets, and these are fitted with syphon traps. The house connexions are 6 in. and upwards; there are no cesspools known to exist; the sewers at present discharge into the river Ribble.

The present water supply is obtained from the Cowley Brook, and streams in the south side of Longridge Fell (about 18 miles from Preston), which stream flows into the river Ribble above Preston. This water is conveyed to the Spade Mill reservoir, which is capable of holding 110,000,000 gallons. Another source of supply is the Loud Brook, which flows into the river Hodder and thence into the Ribble. The water from this brook is conveyed to Alston reservoir by a conduit 4 ft. diameter.

Alston reservoir is capable of containing 78,755,161 gallons, so that the total supply is 188,755,161 gallons.

The gathering grounds of these two sources of supply contain about 2,777 acres.

This supply has become inadequate for the requirements of the town, as the demand for water in the town and suburbs has gone on rapidly increasing, the demand for manufacturing purposes having more than doubled during the past 10 years. From these causes the town has been short of water in the summer months; and for the scarcity of water, and fear of running short for the domestic supply, the sewers in the town have not been flushed, and the streets have been only partially watered, thereby causing great annoyance and damage from dust; and the dirty crowded courts and unhealthy portions of the oldest parts of the town could not be cleared so effectually for want of water.

The quality of the Loud water is also very much complained of, so that the corporation are about to expend 65,000*l.* in procuring water from the valleys of the Langden and Handen brooks which are on the millstone grit, and where water of the purest quality is to be obtained.

The present supply is intended to be constant, and all houses are connected direct with the mains.

BLACKBURN.

The following statement is compiled from information kindly given by F. Smith, Esq., borough surveyor, and by Mr. Whitehead, the secretary of the waterworks, and also from extracts from the Municipal Corporations' Directory.

Blackburn derives its name from the black colour of a rivulet which runs through the town. It has ample railway communication with all parts of the country, and by means of the Leeds and Liverpool Canal, with the ports of the eastern and western coasts.

The population is estimated to be about 80,000 persons, who live in 15,300 houses; the gross estimated rental is 225,000*l.*; the rateable value 182,000*l.*; and the area borough 3,681 statute acres.

The rates for highways and sewerage are 3*s.* 1*d.* in the pound; the poor rates are 3*s.* in the pound.

Main drainage works have been executed at a cost of 90,000*l.*

The are 32 miles of sewers in main streets, and 19 miles of subsidiary mains. Of these about 10 miles are composed of brick, egg-shaped, and varying in size from 6 ft. by 4 ft. 8 in. to 2 ft. 6 in. by 1 ft. 8 in. The rest are glazed earthenware socket jointed pipes, varying in size from 21 in. to 9 in. diameter.

Ventilation is effected through trays containing charcoal and placed at the end of each sewer.

The down spouts are connected direct with the sewers, with which also a few large chimneys are connected, and at the higher levels of the town small shafts terminating in an archimedean screw at the top have been affixed to buildings. Special flushing arrangements are not considered necessary, as all the sewers have a good fall.

About 14,000 houses are drained with 9 in., 6 in., and 4 in. glazed earthenware socket jointed pipes, which are all properly trapped, and connected with slopstone pipes, down spouts, and cesspools.

There are only 740 waterclosets in Blackburn, and about 13,500 privies, and 6,700 cesspools, which latter are drained and kept dry; as a general rule there are two privies to each middenstead.

The present system adopted at the outfall is to let the sewage run through tanks, where the solid matter is retained, and the liquids run into the river.

The waterworks at Blackburn are in the hands of a private company. The water is drawn from streams, and from the rainfall collected over a large gathering ground. This is conducted into open reservoirs, which in the aggregate are capable of holding 454 million gallons. The lowest reservoir is about a mile from the town, and about 200 ft. above it. The water is brought in through an iron main 18 in. diameter.

About 16,800 houses, in which from 75,000 to 80,000 people live, are supplied with water, which s laid on day and night direct from the service pipe.

The waterclosets are fitted with cisterns and ball taps, but Messrs. Guest and Chrimes' bib taps are used for house service.

The daily supply averages 1,400,000 gallons, a quantity equal to about 18 gallons per head. For domestic supply the charge is 6 per cent. on assessment to poor rate.

MANCHESTER.

The following statement has been copied almost verbatim from a report by Sir Joseph Heron, town clerk, with which I have been favoured by J. G. Lynde, Esq., borough surveyor. I have also incorporated an extract from Dr. Little's very valuable report, and from the Municipal Corporations Directory.

There are about 250 cotton manufactories in the town and parish, some on scales of enormous magnitude for spinning, weaving, and printing, besides which there are bleach works, silk mills, and manufactories of every description of animal and vegetable fibre.

The city of Manchester comprises within the municipal boundary the townships of Manchester, Cheetham, Hulme, Chorlton-upon-Medlock, Ardwick, and Beswick, containing a total area of 4,203 acres.

The population at census of 1861 was 338,722; it is now (1869) estimated at 370,000; the estimated number of inhabited houses is 73,000; the rateable value of the city amounts to 1,471,331*l.* 16*s.*

Sewage works have been constructed at a cost of about 340,000*l.*

There are about 280 miles of main sewers in the city, and the area sewered is 3,235 acres. The main outfall sewers, varying in size from 6 ft. by 3 ft. to 3 ft. by 2 ft., are principally constructed of brickwork. The smaller sewers are glazed earthenware oval pipes, varying from 25 in. by 18 in. to 12 in. by 9 in. The inclinations generally are very good, varying from 1 in 30 to 1 in 300.

Nearly all the main sewers have such rapid falls that they do not require flushing; in special cases water is used from the nearest main. The only method of ventilation of the sewers adopted is through the down spouts of the houses, and the street grids which are untrapped. There are about 67,000 dwelling-houses within the city, and it is estimated that there are only about 10,000 waterclosets within the city, but there about 3,800 privies with ashpits connected therewith; the corporation does not permit any water to be thrown into these middens, which are systematically cleaned out by the corporation at a cost per year of 17,668*l.* 10*s.* 4*d.*, including carriage of manure to farmers, when about 130,987 tons are removed.

The sewers discharge into the rivers Irwell, Irk, and the Medlock, which are in fact only open cesspools, as they receive refuse from the works on their banks, consisting chiefly of dye works, bleach works, paper mills, chemical works, bone works, tanneries, India-rubber works, and slaughter-houses.

The water supplied is under the corporation, and is obtained from reservoirs made by damming up the river Etherow and its tributaries 18 miles distant from Manchester; the area of gathering ground is 18,900 statute acres, and the area of reservoirs is 601 acres, which hold about 4,582,000 gallons.

From these reservoirs the water is brought by mains to service reservoirs at Godley, Denton, and Prestwich, and from them the higher levels are supplied.

There is also a well sunk in the red sandstone rock at Gorton, about five miles from the city. This well is 12 ft. in diameter and 210 ft. deep, and the water is lifted by a Cornish engine into a reservoir capable of bolding 223,000,000 gallons, and covering 57 acres. The maximum yield of this well was at the rate of 750,000 gallons per day, which supply the lower levels. The area of district supplied equals 81 square miles, and on it are 108,419 houses, which are supplied for domestic purposes, and 9,416 works for trading purposes. The supply is constant, and a daily average of 13½ million gallons is supplied for domestic and trade purposes; 846,000 gallons are supplied per week during 4½ months of the year for watering the streets and flushing purposes. Water for drinking is supplied to the houses direct from the mains, but for waterclosets into cisterns.

The waterworks have already cost about 1,780,000*l.*

Copy of analysis, by Dr. Angus Smith, of water supplied to Manchester:—

	In Grains.
Sulphate of lime	1·743
Sulphate of magnesia	·661
Chloride of magnesia	·555
Chloride of sodium	·499
Iron, per-oxide of	·145
Organic matter	·840
Total residue	4·515
Nitrates	none.
Hardness	2°.

The death rate per 1,000 from 1857 to 1867 was—

1857	31·7	per 1,000 of population.
1858	32·5	„ „
1859	29·1	„ „
1860	28·0	„ „
1861	30·0	„ „
1862	30·3	„ „
1863	32·6	„ „
1864	30·6	„ „
1865	35·5	„ „
1866	34·6	„ „

The high death rate in Manchester is largely due to the excessive mortality in the infant population; nearly one half of all the deaths occurring in children under the age of five years.

The mortality at all ages is, however, abnormally great; consumption and the diseases of the lungs generally, especially bronchitis, are relatively to the population more fatal than in any other locality in England. This is probably due to a considerable extent to the constant irritation produced in the air passages by the dense smoke with which the atmosphere is constantly loaded. Zymotic diseases, including autumnal diarrhœa, also largely swell the death rate.

BRADFORD.

The following statement has been compiled from information given me by the local authorities; extracts have also been made from the Municipal Corporations' Directory.

Bradford is a manufacturing town in Yorkshire, and has railway communication with the principal towns in the kingdom, and by means of a canal has water communication with the Mersey and western coast, and the Humber and eastern coast of England.

The principal trade consists in the manufacture of woollen goods and in the neighbourhood are extensive iron and coal mines, and several large iron foundries dyeworks, soap, grease and gas works.

Population by estimate, 1869, 138,000; inhabited houses by estimate, 1869, 29,280; rateable value, 504,192*l.*; gross estimated rental, 603,314*l.*; area of borough 6,508 acres.

89,637*l.* have been expended in works of main drainage; 21½ miles of main sewers have been already completed, and the work is still going on.

The brick sewers are egg-shaped, from 15 ins. by 12 ins.; the smaller sewers are glazed earthenware pipes, from 8 ins. to 6 ins. Ventilation is effected through the rain-water pipes; there are also vertical pipes from the sewers, carried up to chimney stacks.

There are about 2,000 waterclosets, and a large number of middens; the house connexions are stoneware pipes, varying in size from 4 ins. to 9 ins.

The sewage at present is discharged into a beck, which is a tributary of the river Aire, which it joins about two miles below at Shipley; this beck has obtained an unenviable notoriety in Yorkshire from its excessive pollution, from not only the sewage, but from the refuse cast into it from the various manufactories in the neighbourhood.

The annual rate of mortality has been reduced from 28 to 25 per 1,000.

The water supply is derived from various streams. The area of the gathering ground from which the water is brought is 21,000 acres, yielding from 10 to 12 million gallons per day for town use, and about the same quantity as compensation water. It is stored in 11 reservoirs, occupying an aggregate area of 315 acres; other reservoirs and works are in progress. The supply is constant; and the house connexions are direct from the mains. The annual rainfall is about 36 ins.

LEEDS.

The following statement is compiled from various reports by local authorities, and from Dr. Robinson's report on the sanitary condition of Leeds, in 1867, and from a report on the best mode of obtaining an additional water supply by E. Filliter, Esq., kindly given to me by the author; extracts have been also made from the Municipal Corporations' Directory.

The town of Leeds is an important city in Yorkshire; it has railway communication with all parts of the kingdom, and has water communication with Bradford, Liverpool, and other places by means of the river Aire, the Aire navigation, and the Leeds and Liverpool Canal.

The woollen manufactures of Leeds are very extensive: in addition to which, the working of iron is being rapidly developed; and there exists also numerous dyeworks, tanneries, chemical works, beside factories for a great variety of purposes.

The area of the borough, comprising 12 townships, covers about 34 square miles. The population within the limits of the borough is (1869) estimated to amount to about 250,000 persons; the rateable value is 678,514*l.*

Main drainage works have been executed at a cost of about 180,000*l.* There are about 100 miles of main sewers; the smaller one consists of glazed earthenware pipes 12 ins. in diameter, and the larger ones are egg-shaped brick sewers, varying in size from 2 ft. 6 ins. by 1 ft. 9 ins. to 7 ft. 9 ins. by 8 ft. at the outfall.

There are about 47,000 houses, but only 7,000 waterclosets; there are about 12,000 middensteads or ash privies, about 1,000 of which are situated under dwellings. The corporation undertakes the cleansing of these middens at an annual gross outlay of over 7,000*l.*

The sewers discharge their contents into the river Aire, which is still further polluted by the refuse and waste products of the various manufactories situated on its banks.

On the assumption that the population was 232,428, the death rate in 1867 was 26·9 per 1,000, during 1865 it was 30·9, and 32·3 during 1866. Out of 253 deaths from fever, 93 instances were attended with marked sanitary defects, consisting either of defective drainage or offensive cesspits.

Amongst the various sanitary operations carried on, the following summary exhibits some of the work accomplished during 1867:—

Cottage houses visited with a view to improve their sanitary condition	3,509
Houses disinfected where contagious diseases had occurred	516
Over-crowded houses partially emptied	147
Cellar dwellings closed	33
Offensive middensteads, under or immediately adjoining houses, converted into waterclosets	128
Pigsties removed	125
Orders made by magistrates	45
Miscellaneous other nuisances removed	4,604
Notices and letters issued	7,657

A self-acting tumbler flushing apparatus has been successfully applied to waterclosets in the poorer districts, especially in cases where the privies are used by more than one family.

The scavenging of the city is performed by men employed by the corporation, the contract system having failed; and owing to the unsatisfactory way in which the night scavenging was performed by the contractors, the corporation has also undertaken the cleansing of the ashpits. From April 13th to December 31st, 1867, 14,991 ashpits were emptied, containing 45,307 tons of manure, at a cost of 7,487*l.*; the sale of manure, however, amounted to 4,183*l.*, which materially reduces the gross cost.

Mr. Filliter's Report.

The present supply of water is derived chiefly from the river Wharfe, at Arthington, and partly from the small gathering ground about the Eccup reservoir with certain springs near thereto. Altogether there is a total available quantity in a dry year of somewhat under seven millions of gallons per day, and in an ordinary year of somewhat over seven millions of gallons per day.

The source of present supply is open to suspicion of contamination by the sewerage of Otley, Burley, Ilkley, and Addingham, and the refuse of the paper, worsted, and other mills and works on the Wharfe and its branches, above the point at which the water is pumped.

The conclusions arrived at in the report are thus summarized:—

That the new source should be one capable of affording a supply of about 20 millions of gallons per day.

That the hardness of the water should not exceed, if possible, four or five degrees.

That the river Washburn is capable of affording this quantity and quality of water chiefly by gravitation, but assisted in dry weather by pumping from the foot of the Washburn; the water for this purpose being conveyed by pipes, laid thence to the present works at Arthington.

That the cost would be about 317,000*l.*; other suggestions are made, but the one above has been adopted, and is in course of construction.

The use of cisterns in waterclosets is compulsory; and Messrs. Guest and Chrimes' fittings are recommended.

PENRITH.

A small town situated in Cumberland. Its population amounts to 7,948 persons, who live in 1,721 houses; the gross estimated rental of the district amounts to 37,249*l.*

Main drainage works have been executed at a cost of about 5,000*l.* The sewers consist of stoneware pipes, varying in size from 6 ins. to 14 ins. They are ventilated chiefly through the rain-water pipes; and are flushed partly from the water mains and partly from the beck, which runs through the town.

The water supply is derived from the river Eamont, the overflow of the Ulleswater Lake, from whence it is pumped into a reservoir, and brought into the town.

The sewage is applied to meadow land. This meadow is situated between the rivers Eamont and Louther just above their confluence; and the sewage is conveyed through an iron main under the river Eamont, and flows through open stoneware carriers on a raised embankment, and is distributed through open trenches to such parts of the meadows as may be desired.

At its outfall into the main carrier it is received into a small tank, where by a simple arrangement it is made to mix with carbolic acid.

The use of carbolic acid is strongly advised by the lessee of the meadow, Mr. McDougall, the inventor of McDougall's carbolic acid disinfectant. He states that by its use flies are driven away; and that this is a matter of some importance, as the meadow to which the sewage is applied is immediately in front of and distant about a quarter of a mile from a gentleman's house. The grass of the meadow is grazed by cattle, who thrive very well on it.

The effluent water passes off into the two rivers. No complaints have arisen from the owners of property on either side.

CARLISLE.

The following statement has been drawn up from information supplied and copied from a report written by Edward Morley, Esq., city surveyor; and extracts have also been made from the Municipal Corporations' Directory.

The city of Carlisle is placed on a slight eminence, at the confluence of the rivers Eden, Caldew, and Peteril.

The principal trade consists in the manufacture of woollens, coarse linen cloth, calico printing, and cotton piece goods; there are also iron foundries, breweries, and tan yards.

Population, 1861, 29,417, estimated, 1869, 31,000; inhabited houses, 5,140; estimated number of electors, 4,000; burgesses, 3,500; rateable value, 88,000*l.*; area of borough,

1,525 acres; municipal income, 27,000*l.* Main drainage works were executed in 1853–1855 at a cost of 23,000*l.*

About 20 miles of main sewers have been constructed, consisting of brick sewers, iron and earthenware pipes, varying in size from 3 ft. 9 ins. by 2 ft. 6 ins., down to 9 ins. diameter. They are ventilated by connexions made with tall chimneys, and through charcoal ventilators into the streets, and through the down spouts, and are flushed by water from the streams and by chambers especially constructed for the purpose. Every house in the town is connected with the sewers by circular 9-in. or 6-in. diameter pipes; no cesspools are allowed; the sewage is partly utilized in irrigating the land, and is partly delivered into the river Eden.

The scavengering is performed by the board's own workmen, though the horses used are supplied by a contractor; the annual cost of scavengering is 855*l.*

Sewage Irrigation Works.—The site of these works is situated about five-eighths of a mile from the market place, in a north-easterly direction from the city, and is surrounded on three sides by the rivers Eden and Caldew, and and on the fourth side by the North British and Caledonian Railways.

These works were designed and constructed by Mr. H. W. McKie, in the year 1860, at that time city surveyor, on behalf of Mr. A. McDougall, of Manchester, who leased the whole of the sewage of Carlisle for a term of 15 years for the nominal rent of 5*l.* a year.

The total population is about 31,000; but the whole of the sewage is not at present used for irrigation, owing to one district, containing 9,400 inhabitants, delivering its sewage into the main outlet sewer below the site of the engine works.

A 4-horse power engine, working one of Gwynne's centrifugal pumps, lifts the sewage from a well in connexion with the main outlet sewer to the height of about 12 ft. and delivers it into an open trench, constructed along the side of the river embankment, with an inclination of 1 in. in 1,000; the sewage is then distributed where required by means of movable iron troughs, 12 ins. by 8 ins. Previous to pumping, the sewage is deodorized by lime-water and carbolic acid, in the proportion of one gallon of the fluid to 40,000 gallons of sewage, at a cost of about 25*l.* per annum.

The sewage is distributed over the whole of the lands, in extent about 110 acres, about four times a year. The subsoil of the land is sandy and very porous, allowing water freely to percolate, and is laid down in ordinary pasture, and is entirely grazed.

Mr. McDougall has sublet the whole to an extensive sheep farmer and butcher in the town. The cost per acre is about 10*l.* per annum, including all working expenses; the value of the land previous to irrigating was about 4*l.* per acre, and is now let at 8*l.* per acre.

The natural grasses have not been made any coarser through the irrigation works, but have increased in firmness and quality, and the sheep and cattle eat it readily.

It has been stated that the patients in the lunatic asylum have been made ill from this irrigation, but it is altogether a mistake.

The meadows immediately adjoining the asylum were being irrigated in a very crude manner by the sewage from the asylum, and the medical officer stated that the patients were afflicted when the wind blew over the asylum meadows in a certain direction.

The distance between the town irrigation meadows and the asylum is three miles, as the crow flies; and the whole of the town lies between, at a distance of only half a mile from the works; and if there had been any truth in the assertion, it is natural to suppose that the inhabitants of the city would have suffered.

In Mr. McDougall's lease a clause is inserted "That should any nuisance arise, the corporation shall be at liberty to break the lease without any compensation;" but up to this time there has not been a single complaint, although the site of the works is surrounded by the castle and several villas.

Water supply is obtained from the river Eden, from whence it passes through an open filter, which has been constructed on—what I am informed is termed—the Scotch plan; this plan is not approved of, and they are now altering it to the usual English one.

The engine-house is situated on a slight eminence, at about 1,400 yards from the river Eden. The water is pumped from here to a reservoir, a distance of about 2,200 yards: this is capable of holding about 2½ millions of gallons. It is about a mile from the centre of the town, and its top water level is 41 ft. above the highest part of the town, and 84 ft. above the lowest part of the town. The service is constant, and no cisterns are permitted, the house service being laid on direct from the mains.

The above structural works were performed with money borrowed in loans; principal and interest to be repaid in 30 years.

HEXHAM.

The following information has been for the most part kindly supplied me by William Robb, Esq., chairman of the Public Health Committee.

Hexham is a small town in Northumberland, situated on an eminence rising in the valley of the town.

The population, according to the census of 1861, was 5,270, and it is estimated that there has been no great increase since; inhabited houses amount to 525; gross estimated rental, about 21,000*l.*; rateable value, 18,496*l.* 15*s.*; main drainage works have been executed at a cost of nearly 5,000*l.*

They extend over a length of four miles, and consist of glazed earthenware pipes, varying in size from 18 ins. to 9 ins. Flushing is effected from hoses attached to the street hydrants, and ventilating shafts open into the streets, protected with charcoal trays. Every house is connected with the sewers; but there are only 230 waterclosets in the town. No cesspools exist, but there are a few middens which are, however, kept dry; at the outfall there is a brick elliptical formed

sewer of about 200 yards long; through this the whole of the sewage flows into depositing tanks, which are in duplicate, where the solid matter is partially deposited, and from which the sewage flows into the river Tyne.

These depositing tanks are periodically cleaned out and the contents mixed with town street refuse, and sold to farmers at about 1*s.* per ton.

The water supply of Hexham is gathered from a reservoir on the side of the hill above the town, where an embankment has been thrown across a valley into which spring water flows. The reservoir, which is open, is capable of holding 20 million gallons of water.

The water is conveyed through an iron main, 12 ins. in diameter, into the town, and distributed through mains varying from 12 ins. in size to 3 ins. in diameter.

The supply is constant, and nearly every house is supplied direct from the mains; no cisterns are allowed.

The scavengering of the town is done by the board.

The permanent works were performed out of monies borrowed, repayable for the most part in 30 years, at 6½ per cent. per annum, meeting both principal and interest. The remainder was borrowed at 5 per cent. on debenture.

Since these works of water and sewerage were finished in 1865 the death rate has been reduced from 27 per 1,000 to 22 per 1,000.

SUNDERLAND.

The following statement has been compiled from information given me by William Snowball, Esq., town clerk of Sunderland. Extracts have also been made from the Municipal Corporations' Directory.

Sunderland is an important town in the county of Durham, and is situated on sloping ground abutting the sea, or the south bank of the river Wear.

Sunderland and Newcastle are the two largest coal shipping ports of the United Kingdom, and besides the immense shipbuilding docks of the former (second only to Liverpool for the number of ships of small burthen annually launched), it enjoys an immense export trade in glass, rope, chains, anchors, and other ironwork, earthenware, &c., &c.

The population is estimated at 85,000, who live in about 10,000 houses; the gross estimated rental is 300,000*l.*, and the rateable value 250,000*l.*, and the area of the borough is 2,768 acres.

Main drainage works have been executed, at a cost of 163,000*l.*

The sewers are made of brick and earthenware pipes: the brick ones are egg-shaped, and vary in size from 4 ft. by 2 ft. 8 ins. to 2 ft. 10 ins. by 1 ft. 10 ins., and the pipes from 18 ins. to 9 ins. The sewers extend over about 80 miles, and their contents are discharged into the river and into the sea; they are ventilated through connexions with the factory chimneys, and are flushed with water taken from the mains.

The water supply is in the hands of a private company, who have extensive works at Humblet-on-Hill, Pulwell, Cleadon, and Ryehope. At these places the water is raised from artesian wells, sunk and bored into the limestone rock, and it is stated that the storage capacity of the several reservoirs equals 8½ millions of gallons; the daily supply, which is on the constant system, equals 3½ to 4 millions of gallons. Houses are supplied direct from the mains; about 3,000 waterclosets are supplied, and each one must be fitted with double valve cisterns. Messrs. Guest and Chrimes', and Lambert's fittings are used.

Not only Sunderland, but South Shields and Jarrow are supplied by this company.

ALNWICK.

This statement is made from information kindly given me by R. Elliot, Esq., the town surveyor.

Population of district, about 7,000.
„ town, „ 6,000.

The whole town is sewered with glazed earthenware pipes, varying in size from 18 ins., 15 ins., 9 ins., to 6-in. pipes. The main sewer is laid on a gradient of 1 in. in 400 ins. and discharges into the river Alne, about 1½ miles below the town. The street mains generally have a good fall; there are two flushing chambers, and the sewers are flushed once a fortnight from hydrants. Ventilation is chiefly effected by rain-water down pipes, which are carried above the windows. There are about 1,000 waterclosets connected with the sewers; these are all fitted with a syphon trap; there are also about 1,500 trapped sinks. The house connexions are 6-in. pipes.

The sewers carry off about half the rainfall; the other half is taken in at storm gullies and carried in conduits to the river.

The water supply is obtained from various springs, the farthest of which is 2½ miles from the storage reservoir, to which the water is conveyed through glazed earthenware pipes. Before it reaches the reservoir, however, the water passes through a filter made of the usual form and composed of broken stones, gravel and sand, which are 4½ ft. deep in the aggregate. The storage reservoir is about a quarter of a mile above the town, is covered, and capable of holding about 220,000 gallons when full. It stands on a considerably higher level than any part of the town, and would give a mean head of 150 ft.

The supply is generally constant, but in seasons of long drought it is necessary to cut it off for a few hours during the day.

It is distributed through iron mains of the following sizes:—9 ins., 6 ins., 4 ins., 3 ins., and 2 ins.; there are, however, very few 2-in. pipes, as they are considered to be too small. The house supply, both for waterclosets and other purposes, come direct from the main. Messrs. Guest and Chrimes' taps and fittings are used.

The iron mains were coated inside and outside with Dr. Smith's solution, and after 15 years there is not the slightest corrosion; the branches are galvanized iron.

BERWICK-ON-TWEED.

The following statement is compiled from information supplied to me by James Weddell, Esq., clerk to the local board, and from extracts from the Municipal Corporations' Directory:

A seaport town, carrying on a considerable coasting trade with London, Edinburgh, Newcastle, Hull, &c., by means of steamers and sailing vessels. The chief exports are fish, corn, whisky, and coal; the chief imports, iron, timber, flax, hemp, and tallow. There are extensive ironworks for constructing steam engines and mill castings, and slips for the repairs of vessels.

Population of the borough, 13,303. The borough includes the adjoining townships of Tweedmouth and Spital, but these townships have not been drained or supplied with water by the local board of health. The population of the town of Berwick, which has been drained and supplied with water, 8,571. Gross estimated rental of that part of the borough assessable to special rate, drained and supplied with water, 18,500*l.*; rateable value, 16,500*l.*

The main drainage carries off both the storm water and the sewage, and has its outfall into the river Tweed.

The main drains are brick circular sewers, varying from 2 ft. 6 ins. at outfall to 18 ins. at the upper levels, and extend over a length of 6,353 yards; the subsidiary drains are glazed earthenware pipes, varying in size from 15 ins. down to 9 ins.

Ventilation is effected by shafts (metal pipes) which are carried to the tops of houses, where there are blank gable ends; and also through the down spouts and manholes.

The sewers are flushed by metal pipes connnected with the water mains, let into special flushing chambers, and at the dead end of sewers. There are no cesspools in the town; and there are 693 waterclosets, which are all syphon trapped; size of soil pipe, 6 ins., pipe from sinks and kitchen, 4 ins.

The scavengering of the town is performed under the direction of the local board of health, who have their own plant, and employ the requisite number of labourers.

The drainage works were executed at a cost of 6,182*l.* 15*s.* 11*d.*

The average annual mortality rate per 1,000 during the 10 years prior to the completion of works of sewerage and water supply—25·3 per 1,000.

During the subsequent eight years—23 per 1,000.

Water supply is obtained from a reservoir, formed by an embankment thrown across a valley about three miles from the town: this reservoir covers about five acres, and is calculated to hold 8,500,000 gallons. From this reservoir the water gravitates to a service reservoir, which is about 300 ft. above the lowest part of the town, and holds 250,552 gallons of water; from thence it is conveyed by a 12-in. pipe into the town.

Unfortunately, several years after construction, the service reservoir has been found to leak, and the townspeople are put in dry weather to the very greatest inconvenience: the supply, which was calculated to yield about 30 gallons a head to each individual, has dwindled down in dry weather to only 36,000 gallons during the day, or a little more than four gallons per head. During August 1869, the average supply was 51,000 gallons per day.

Of course, under these circumstances, the supply is necessarily intermittent.

The waterworks cost 8,218*l.* 1*s.* 5*d.*

EDINBURGH.

The following statement is compiled from extracts copied from the extremely valuable reports of Charles MacPherson, Esq., borough engineer, and of Dr. Littlejohn, F.R.C.S.E., medical officer of health for the city.

The greater part of the city of Edinburgh is built on the slopes of three ridges, lying nearly east and west, and parallel to each other; the High Street and Canongate being on the centre ridge, George Street on the northern, and Heriot's Hospital on the southern.

The drainage of the city is naturally to the Firth of Forth by three main outlets; namely,

1. The Craigentinny Burn draining the area which includes the slopes on each side of the centre ridge and opposite slopes.
2. The water of Leith draining the area which includes the slope northward of the north ridge; and
3. The Jordan or Powburn, which receives the drainage of the slope southward of the south ridge.

Between the years 1778 and 1825 about 19½ miles of sewers were constructed, at a cost of about 69,000*l.*

The size of the sewers then laid down is generally 5 ft. 6 in. by 3 ft. The branch drains for collecting the refuse from kitchen sinks, waterclosets, &c., were generally imperfectly constructed with rubble stones, side walls and pavement sills, and covers. In the course of the branch drain a built cesspool was invariably formed, the evil arising from which has been forcibly pointed out by Dr. Littlejohn, and the substitution of syphon traps recommended.

From 1825 to 1853 little seems to have been done in regard to sewerage; but since 1853 about 20 miles of sewers have been constructed, of which above five miles are built sewers, above three miles are pipe sewers above 12 ins. diameter, and the remainder are pipe sewers 12 ins. diameter or less. The cost of these works has been nearly 50,000*l.*

Edinburgh is pre-eminent for its arrangements for the removal of solid refuse, 50,000 tons of which are annually collected and sold for manure. The inhabitants are compelled by the Police Act to bring all household refuse to the streets, and 55 carts or waggons are employed in the removal of it from the Old Town and poorer districts in the morning and evening, and from the New Town in the morning.

Eight overseers and 135 scavengers are employed under the inspector of cleaning in these operations. The scavenger, after filling the cart, sweeps up any refuse that may have been left in the streets, and conveys it to covered dust boxes, provided in various parts of the city, which are cleaned daily.

These dust boxes are 8 ft. long by 4 ft. broad, and 6 ft. high to the eaves, with a sloped roof, and entrance is obtained by a door about 3 ft. wide.

The cost of the whole cleaning arrangements, including implements, collection of rates, &c., &c., amounted in 1866 to 17,268*l.*; but as the manure sold for 8,072*l.*, the actual cost to the city was 9,556*l.* The cartage of the refuse is let to a contractor, the collection of it being the work of the scavengers.

The greater part of the dry refuse consists of that from dwelling-houses, namely, ashes, vegetable matter such as potatoe peelings, cabbage leaves, &c., animal matter resulting from the cleaning of fish, fowls, &c.; and there are also the horse droppings, and other impurities collected from the streets by the scavengers.

The mud from the macadamized roads is not mixed with the manure.

Besides the ashes obtained from the poorer neighbourhoods there is some excrementitious matter. After the ashes and refuse from the streets have been taken to the waggons, the excrement from the public conveniences, of which there are 26, amounting to about seven tons daily, is then added.

This refuse is sent out of the city by three lines of railway and by the Union Canal; or, in the event of their being no demand for it at the time by any of these routes, it is taken to two depôts situated beyond the outskirts of the city.

Application of Sewage Irrigation.—The waters of the Craigentinny Burn, the Lochrin Burn, the Jordan Burn, and the Broughton Burn are used in irrigating about 336 acres of land adjoining them; and the following is a description of the details of the management of the meadows irrigated by the Craigentinny Burn :—

The area within the city, draining towards it, is about one square mile and a half in extent. From this district there flows about 20 cubic feet of spring water per minute; the surplus rainfall being the non-absorbed portion of 24 ins. per annum, and the sewage from a population of 95,589 persons according to the census of 1861, with a water supply, say of 25 gallons per head. Of this population, about 60,000 have the use of waterclosets, and the excrementitious matter from about 15,000 or 20,000 of the remainder finds its way to the sewers connected with the burn.

The sewage emerges from the sewer at Clockmill Bridge, and from this point till it reaches the sea near Portobello, a distance of fully a mile and a half, it is used for the irrigation of lands adjoining the stream.

Various kinds of soil are irrigated; the subsoil of the part of the meadows nearest the city is peat with loam over it, near the course of the burn; while to the northward it is naturally sand, but the sand has been taken away, and the ground made up with rubbish of buildings, dressed off with soil. Further down the course of the stream the soil is reddish clay, or loamy clay, or sandy clay; while at the part of the Figgate Whins, adjoining the sea-shore, it is pure sand, with a coating of rich loam, varying from 1 inch to 4 or 5 inches deep, entirely derived from repeated applications of the sewage, no soil having ever been spread over the sand.

The deeper soil is nearest the channels for conveying the sewage to the land. The meadows in the farm of Loch End, at Restalrig, and at Craigentinny, have a slope transversely to the course of the stream, varying from the steepest part 1 in 55, which is of small extent, to about 1 in 50, which is the slope of the greater part of the meadows. The Figgate Whins were artificially levelled to allow of irrigation.

The ground has been dressed, so as to have a regular slope transversely, from the course of the stream up to artificial channels called feeders, about 18 ins. wide by 6 or 8 ins. deep, formed round the ground to be irrigated; these feeders have been formed with only fall enough to cause the sewage to flow slowly along them.

At intervals of from 30 to 45 yards, channels about 12 ins. deep and 6 ins. wide are formed from the byewash to the feeder, thus disposing of the ground into panes or square plots of about three-quarters of an acre each; the irrigation of these plots is a separate operation.

The sewage can be turned into the feeders as required: and the irrigation of any particular plot is effected by stopping up the feeder where it passes the lower end of the plot, until it becomes full of sewage, then, by small notches on the top of the bank forming the feeder, about 3 feet apart, the sewage is drawn off from the feeder, and overflows the ground in minute streams, the number of which may be increased or diminished at pleasure. At some places in the flat ground the transverse channels convey the sewage down each side of the plot, and from them it is drawn off by a number of smaller channels.

The point aimed at is to have the ground so disposed that the sewage shall flow equally, if possible, over the whole surface.

The irrigation is begun in the month of February, when about a quarter of an inch in depth of sewage is allowed to flow over the ground for 24 hours; 10 days afterwards, the same quantity for 12 hours; and a third soaking is given in another 10 days, care being taken not to soil the partially grown grass by the latter operation. This is the whole process, repeated once for each crop, of which there are generally four per annum.

It is important to remark that the land, except the sand at Figgate Whins, has been drained thoroughly to a depth of 4 feet below the surface. It was found that with shallower drains the sewage was drawn off by the drain, leaving the lower part of the ground without irrigation. At the Figgate Whins the sewage soaks into the sand and oozes out upon the sea-shore.

The kind of grasses grown are Italian rye grass and meadow grass; the rye grass requires to be re-sown every third year, but the meadow grass has not required re-sowing, not even on the Figgate Whins, which was sown about 40 years ago, when the ground was first irrigated.

The irrigated ground is let off in small plots or squares for the season to the highest bidder; the grass is cut by the tenants as required. An average crop is considered to be from 30 to 40 tons per acre in four cuttings.

The whole grass is eaten by 3,100 cows, but after the fourth crop is cut, sheep are turned on for about a fortnight; the sheep do not seem to thrive, however, although the food is plentiful; the grass has been found most suitable for feeding cows; the attempt to use it for feeding other animals having been found not to answer, and the cost of converting it into hay being proved to be such as to render the process unprofitable.

The price paid for the plots varies considerably; the best being known to bring 40*l.* per acre, while others are as low as 15*l.* to 20*l.*

The rental of the Figgate Whins previous to irrigation was about 20*s.* per acre, while, when irrigated, parts have been let for some years at 40*l.* per acre.

In no case is the whole of the sewage of any of the streams absorbed and no irrigation is carried on from September till February, except at the Figgate Whins. During this time the whole sewage passes to the Firth of Forth without being used.

The water supply of Edinburgh is in the hands of a private company, and the water is derived from the Crawley and other springs. In 1863, the daily supply amounted to 31 gallons for each inhabitant, but it is expected that this amount will be increased to 39 gallons per head. The service is constant.

There are 49 public wells and 20 drinking fountains distributed throughout the city. An enormous waste of water is complained of as taking place through the faulty construction of the ordinary watercocks, and the construction of the water cisterns; and their connexion with the drains is also complained of.

The city has been divided into 19 sanitary districts, seven of which constitute the new town, nine the old town, and three form the southern suburbs.

The district of Landward, although not within the municipal boundary of the city, has been included in the reports of the Registrar General under that of Edinburgh.

In the table below are given the population of the three divisions, as at the census of 1861, their respective mortality during 1863, their acreage, and the density of the population.

	Population, 1861.			Mortality, 1863.			Death rate per 1,000.			Area in Imperial Acres.	Proportion of Population to each Acre.
	Above 5 years.	Under 5 years.	Total.	Above 5 years.	Under 5 years.	Total.	Above 5 years.	Under 5 years.	Total.		
New Town - -	55,084	5,519	60,603	741	368	1,109	13·27	66·67	18·3	1765·5	34·3
Old Town - -	85,187	12,901	98,088	1,618	1,397	3,015	18·99	108·29	30·73	1078·5	90·9
Southern suburbs -	8,513	917	9,430	146	46	192	17·15	50·16	20·36	1104·	8·5
Total for Parliamentary Area -	148,784	19,337	168,121	2,505	1,811	4,316	16·83	93·65	27·67	3948	42·5
Landward - -	2,130	193	2,323	85	11	96	29·9	57·	41·32	3127·	·7
Total - -	150,914	19,530	170,444	2,590	1,822	4,412	17·16	93·39	25·83	7075	24·1

Edinburgh has never been considered an unhealthy city; it is, however, peculiarly exposed to the ravages of epidemic diseases of all kinds on account of its dense and badly housed population; and whether the epidemic be cholera or fever the poorer inhabitants living in the crowded districts of the old town suffer in a marked degree.

The following table shows the average death rate for the five years ending in 1863 to have been only 24 per 1,000. It will be observed that the population has been calculated for each year, and that certain deductions have been made for the number of deaths, viz., those of persons who died in the Royal Infirmary, and belonged to Leith or to various counties of Scotland.

By this means a correct estimate can be formed of the death rate of the city, which would otherwise be burdened with a large amount of mortality, for which it is solely indebted to the celebrity of its hospital and medical school.

Year.	Population within the Parliamentary Boundary.	Total Deaths registered within the Parliamentary Boundary.	Deduct Deaths belonging to		Remaining Mortality.	Births.	Death rate per 1,000.	Birth rate per 1,000.	Excess of Birth rate over Death rate.
			Leith.	County.					
1859	166,380	3,619	23	86	3,520	5,446	21·09	32·73	11·64
1860	167,248	4,149	22	97	4,030	5,380	24·09	32·16	8·07
1861	168,121	4,077	23	108	3,946	5,694	23·47	33·87	10·4
1862	168,989	4,661	19	137	4,505	5,722	26·65	33·86	7·21
1863	169,857	4,496	31	149	4,316	6,122	25·4	36·05	10·65
					Average - -		24·15	33·74	9·59

GLASGOW.

The following statement is compiled from extracts from various reports kindly given me by Dr. Gairdner, the medical officer of health of Glasgow, and from the report on the vital statistics of Glasgow by Wm. West Watson, Esq., the city chamberlain, and from the report of Messrs. Bateman and Bazalgette on the sewerage of Glasgow and the purification of the river Clyde.

Mr. Watson's Report.

The city of Glasgow, including Gorbals, lies on both sides of the river Clyde, and the population within the municipal boundaries is estimated to have been, in the middle of 1868, 447,000 persons, basing the calculation upon the average family ratio which was found to exist in 1861.

Inhabited dwelling-houses, 93,393, taken at 4·72 - - -	440,814	
Inmates of public institutions, barracks, and seamen in harbour, say -	6,186	
Total population within municipal boundary - - - -		447,000
Population in the suburbs - - - - - -		69,565
Total estimated population of the city of Glasgow, inclusive of suburbs -		516,565

The births and deaths ascertained to have been registered in 1868 are represented by the following ratio:—

Births - - - -	41·63 per 1,000
Deaths - - - -	30·928 „

The following abstract shows the entire rental of Glasgow during 1868–69:—

	£
Houses, shops, warehouses, factories, gas, water, and other works -	1,904,092
Railways and canals - - - - - - -	40,536
	£1,944,628
Royalty beyond borough—houses, shops, &c. - - - -	30,738
Railways and canals - - - - - - -	11,580
	£1,986,946

The area of the borough is 5,063 acres; the average number of persons to an acre was, in 1861, ·78.

From Messrs. Bateman and Bazalgette's Report.

Compared with most English towns, the city of Glasgow covers a small area in proportion to its population. The land on which the city stands rises rapidly on the north bank of the river Clyde, the higher parts of the town attaining an elevation of about 200 feet above the sea. On the south side some low level ground occupies a narrow belt adjoining the river, from the southern margin of which the ground rises to an elevation about 100 feet above sea level.

Several burns, the Camlachie Burn, the Molendinar Burn, St. Enoch's Burn, and the Pinkston Burn, together with the more important stream of the river Kelvin, cut up the sloping ground on the north side of the river into a succession of ridges and valleys, which rather facilitate than hinder the convenient sewage of the city.

On the south side the ground is more uniform in level, no burn or stream of any importance occurring within the area occupied by buildings.

The city itself, on both sides of the river, possesses great facilities of good drainage, which have been carefully and judiciously taken advantage of, and the city may be considered, therefore, as being thoroughly well drained. For the greater part the sewers have short and rapid runs, and flow direct into the river. The extensive introduction of waterclosets, together with the refuse of many distilleries and chemical works, swell the volume of the sewage beyond that of most towns, and increases its offensiveness.

Received into the river, it stagnates and putrifies in the harbour, poisoning the air, injuring the health of the residents, acting destructively on the sheathing of vessels in the harbour, annoying all travellers by steamboat, and no doubt injuring the trade of the port.

Messrs. Bateman and Bazalgette in their report (from which space will not permit me to make further extracts) propose to intercept all the sewage of the town, and to carry it by a culvert, exceeding 27 miles in length, to the sea coast of Ayrshire, to be utilized in irrigating the sandy land of the coast. They estimate that not less than 8,000 or 9,000 acres would be required for this purpose, and the probable gross outlay, if this scheme were carried to completion, would amount to 1,253,256*l.*

There are at present upwards of 70 miles of main drainage in Glasgow; the sewers are composed of brick, and are egg-shaped; they vary in size from 2 feet to 5 feet, and are ventilated by the rain-water spouts, and through gratings and manholes. No especial arrangements have been made for flushing them.

The house connexions are laid in pipes varying in size from 9 inches to 12 inches in diameter.

The watercloset system is not universal in Glasgow. In the report of the engineers above quoted, it is mentioned that out of the 90,000 families of which the population of Glasgow is estimated to consist, 40,000 are without waterclosets.

The city has been divided by Dr. Gairdner into 54 sanitary districts, which are under the medical inspection of six Medical Officers of Health, Dr. Gairdner supervising the whole.

The Medical Officers of Health order tenements to be fumigated and white-washed; articles of clothing to be disinfected; bedding of fever patients to be destroyed and replaced; closes, streets, lanes, and gutters to be flushed with water; besides inspecting tenements let in lodgings, and seeing that the terms of the law regarding overcrowding are carried out.

Sanitation is also vigorously carried out by the improvement committee, who are doing a vast amount of good in pulling down and re-constructing houses in the most densely populated quarters of the town, the overcrowding in some portions of which exceeds that of the worst parts of London.

The cleansing of the city is performed under the board of police of Glasgow.

The average number of men employed during the year was as follows:—

In the scavengering department, including street sweepers, cleaners of private streets and courts, broom makers, fumigaters, washers, &c.	392 men.
In the manure department	346 „
Average total	738
Horses employed	118
Total railway waggons belonging to the city	250

The total quantity of manure collected:—

	Tons	cwt.
By night service, contents of middens and ashpits	97,237	1
By day service, street sweepings	42,002	12
Remaining on hand	6,351	0
Total	146,590	13

During the same period the following quantities of manure have been dispatched:—

	Tons.	cwt.
By rail, 15,193 waggons at $6\frac{1}{20}$ per waggon	101,635	13
By canal	6,878	0
By farmers in their own carts	35,420	11
	143,934	4
Stock of manure on hand	2,656	9
Total	146,590	13

	£	s.	d.	£	s.	d.
The total expenditure on these operations amounted to				41,729	3	6
But from this has to be deducted sale of manure	21,001	4	9			
Stock on hand:—						
Value of manure, implements, and hay	1,843	1	0			
Amount received for private work	6,168	5	8			
Balance from general assessment	1,873	5	9			
				30,885	17	2
Leaving as the total cost to the city				£10,843	6	4

The works for the supply of water to Glasgow are one of the most extraordinary instances of successful engineering on record.

In the words of Mr. Gale, for whose very valuable report on the Loch Katrine works I am indebted to the Secretary of the Institute of Engineers in Scotland:—

"In the face of doubts and distrusts freely expressed, and of unparalleled difficulties arising from the wild and rugged nature of the district through which the aqueduct passed, the whole works, involving an outlay of upwards of 900,000*l.*, and extending over 34 miles of country, were completed in less than four years. It is a work which will bear comparison with the most extensive aqueducts in the world, not excluding those of ancient Rome, and it is one of which any city may well be proud.

It would be impossible in a sketch of this kind to give even a bare outline of this gigantic work. I may, however, briefly notice from the above report, that the gathering ground of the Loch Katrine works, made by damming up Loch Katrine, Loch Vennacher, and Loch Drunkie, covers about 45,800 acres.

The aqueduct from the lochs convey the water to a service reservoir, 25 miles from Loch Katrine. This reservoir has a water surface of 60 acres, and a depth when full of 50 ft., and containing 548,000,000 gallons, and is 317 ft. above ordnance datum.

The water is drawn from the reservoir by pipes, and about 50 yards from it passes into a circular well cut out of the rock, 40 ft. diameter and 63 ft. deep, and is strained by passing through copper wire cloth, 40 meshes to the inch, arranged in oak frames, forming an inner well of octagonal shape, 25 ft. diameter, and from this latter the water finally passes into two lines of pipes leading to the city. These two pipes are 42 in. in diameter, and are intended to deliver the whole 50,000,000 gallons a day. They first pass through a tunnel 440 yards long, and then diminish in size to 36 in. are continued for a distance of about seven miles to the city.

Water is also supplied to the city from the Gorbals waterworks, which draw their supply from the Brock Burn, a small stream having its sources near Brother Loch and Long Loch, in the south-east of Renfrewshire. The surface water is collected in four reservoirs, and, after being filtered, is supplied to the city by gravitation. The lowest reservoir is $4\frac{3}{4}$ miles from the upper sources of the stream, and about six miles from Glasgow.

In connexion with these reservoirs there are two distributing tanks, and two sets of filters. Each set can be worked while the other is under repair. Each set of filters is divided into three transverse sections, any one of which can be cleared without stopping the action of the others. The filters are upon the Lancashire principle, the sand being removed when foul, washed, and again replaced. When any filter has ceased to discharge its proper quantity of water, about 1 in. of sand is removed, and a new filtering surface exposed. The sand is washed by an upward current of water in cast-iron boxes.

The area of the filtering surface is 3,800 square yards, and the average quantity of water passed through is 875 gallons a square yard per 24 hours.

The two tanks into which the water passes from the filters are each 220 ft. long., 66 ft. broad, and 19 ft. deep. They contain 3,250,000 gallons, and are 240 ft. above ordnance datum when full.

The main pipe to the town, 24 in. in diameter, passes from these tanks, the inlets being furnished with valves and copper wire cloth strainers. The average daily supply of water furnished by the commissioners during 1868 was obtained thus:—

From Loch Katrine - - - - - -	22,100,000 gallons.
From Gorbals gravitation works - - - -	3,730,000 „
Total - - -	26,830,000

The domestic rate is 1*s.* in the pound over the whole municipality, and 1*s.* 1*d.* in the northern suburbs, together with 1*d.* of public rate chargeable to the owners of property within the municipality.

So abundant has the supply been, that the commissioners have been enabled to furnish some of the neighbouring towns, such as Renfrew, Pollokshaws, Rutherglen, &c.

In houses at the higher levels cisterns are compulsory, but not elsewhere, except for water-closets, although many waterclosets are supplied direct from the mains; single valve cisterns are used for waterclosets. The house taps most commonly used are the common ground cocks, which cause great waste.

SWANSEA.

The following statement has been compiled partly from extracts taken from the very valuable report of E. Davies, Esq., medical officer of health, and from information kindly placed at my disposal by E. Cousens, Esq., the borough surveyor. Extracts have also been made from the Municipal Corporations' Directory.

Swansea is a borough situated on the west side of the river Tawy, at its mouth at Swansea Bay in the Bristol Channel. The town has communication with the South Wales and Vale of Neath Railway, and with the South Wales and Swansea Vale Railway. It has also water communication with its own and adjacent counties by means of the river Tawy, the Swansea and Neath Canal, and another canal which runs up the valley for a distance of 16 miles.

The staple trade of Swansea is the smelting and refining of copper, which is brought hither for that purpose from all parts of the world. There are also iron, tinplate, zinc, patent fuel, and alkali manufactories. The exports consist of the articles manufactured here, and the imports of metallic ores, timber, tobacco, hemp, tallow, flour, grain, &c.

Population in 1861, 41,606; in 1869 estimated about 60,000; inhabited houses, 8,778; gross estimated rental, 131,375*l.*; rateable value, 123,000*l.*; area of borough, 4,363 acres.

From Dr. Davies' Report.

Previous to 1857 Swansea was without a system of drainage; at that time there was only one main sewer along the Strand which emptied itself into the river, receiving in its course the contents of the old town ditch, partly surface water and partly sewage from the lower part of the town.

The town ditch was in fact an open sewer along a great part of its course, from 3 to 4 ft. wide, and in some places 5 ft. deep, always stagnant, and in summer weather offensive and dangerous to the public health. The cesspool system was general, and the water supply of that part of the town above the level of the existing reservoir, which was obtained from pumps and wells, was insufficient in quantity, and in many instances of a very questionable character.

In 1857 the main drainage of the town was commenced. There are 5½ miles of brick sewers, and 34 miles of pipe sewers.

The system of sewage adopted in Swansea differs in some respects from that of many towns, and is believed to have advantages peculiar to itself.

The main outlet sewers, constructed of brick, are egg-shaped in section, varying from 4 ft. by 3 ft. to 2 ft. 3 ins. by 1 ft. 6 ins., with other mains of circular glazed earthenware pipes, from 18 ins. to 9 ins. in diameter. Except in the case of cellars abutting on the sewers, houses are not drained directly into the main sewer, but into subordinate sewers at the rear of the houses on both sides of the street. In this way, with the precautions immediately to be mentioned, the risk of the escape of sewer gas into the interior of the houses is avoided, and the expense of private drainage is very much lessened.

The sewers are easy of access, and the drainage of back premises is not carried under the houses. Each house is connected separately with the subordinate sewer, which is finally connected with the main sewer at the end of the street.

Ventilating shafts are constructed in connexion with every manhole along the course of the main sewers at an average distance of 40 yards from each other, and before the gases escape into the street they must pass through trays filled with finely broken vegetable charcoal. The result is most satisfactory, the neighbourhood of the ventilators is not offensive, and as a proof of the efficiency the ventilation it may be mentioned that it is at all times possible to enter the sewers for the purpose of examination and repairs, and the effluvium is never so concentrated as to be overpoweringly offensive to the workmen.

In order still further to protect the interior of houses from danger arising from sewer gas, a double system of traps is provided; the drainage of closets and sinks within houses is not carried direct into the sewer, but the pipes from these places discharge themselves into trapped gullies outside the houses, and above the point of discharge there is a communication with the water-shoot, which acts as a ventilating shaft.

The flushing of the sewers is effected in two ways:—

1st. Where the highest point of the sewer adjoins the street and is easily accessible, the sewers are flushed by means of a hose attached to the hydrant on the water main.

2nd. Where the sewers can only be reached through houses they are flushed by self-acting flushing chambers, which act at intervals of from four days to a week.

The action of the flushing chambers is shortly this: a receptacle balanced on an eccentric axis is gradually filled with water, which, when it reaches a certain height in the receptacle representing a quantity of about 150 gallons, is suddenly discharged into the sewer, the receptacle immediately returning to its place to be in course of time refilled.

The main drainage cost 47,000*l.*

The water supply is obtained from a reservoir capable of holding 300,000,000 gallons, formed by an embankment thrown across the valley of the Lliw river. The reservoir is situated among the hills about nine miles away from the town, and the river receives the rainfall of about 1,860 acres, principally common lands, and is entirely free from any possibility of sewage contamination.

The water flows through earthenware conduits, 2 ft. in diameter, from the storage reservoir into the borough, and is distributed within the borough by about 20 miles of iron pipes, varying in size from 2 ft. to 2 ins. in diameter. About 7,000 houses are connected, and the waterclosets are fitted with cisterns, but for other purposes the water is drawn direct from the mains.

The supply is on the constant system, excepting during a short time in summer, when it is necessary to shut the water off for a few hours during the day.

Dr. Davies says also, "That there is every reason to believe that the sanitary improvement of the district is really beginning to tell on the public health, and the reduced death rate of 1867, viz., 18·1 per 1,000, against 28 of the previous year, and 24·1 of the three years preceding, is an augury of better things, and is an indication that Swansea is about to place herself in a position which, from her natural position, she ought to occupy among the healthiest towns in the kingdom.

PORTSMOUTH.

The following statement is compiled from information kindly supplied me by S. E. Greatorex, Esq., borough engineer, and from the secretary of the water company.

Portsmouth, together with Portsea town (included in the borough), is situated on the island of Portsea, which is 15 miles in circumference.

Population estimated at 115,000; inhabited houses, about 20,000; the area sewered covers 2,374 acres; rateable value, 253,941*l.* 15*s.* The sewage is removed both by pumping and by gravitation. The area of the town from which the sewage is pumped covers 740 acres; of this half is densely populated, the remainder is suburban.

The high level sewer removes by gravitation the sewage over 1,634 acres, half of which is already, and the other half is rapidly becoming, densely built upon.

The sole of the sewers in the low level, or the area pumped, ranges from 3 ft. to 4 ft. below high-water mark to 6 ft. and 8 ft. above it; the outfall is into the sea, and is about 18 ins. below low-water mark; the mouth of the outfall is laid 5 ft. below ordnance datum.

The outfall is situated in Langton Channel, where the tide runs out about seven knots an hour.

From the pumping area the rainfall is excluded as much as possible, but the higher level carries off both storm water and sewage.

The main sewers are egg-shaped and constructed of brick; at their upper end they are 3 ft. by 2 ft., running into 4 ft. by 2 ft. 8 ins., 4 ft. barrel.

The low level empties into an elliptical sewer 5 ft. by 3 ft. 8 ins., from whence it is pumped into the outfall, whence it is conveyed into the sea by two iron pipes, each 3 ft. in diameter.

The branch drains are partly brick, partly stoneware pipes.

The brick drains are all egg-shaped, and vary in size from 1 ft. 9 ins. by 1 ft. 2 ins. to 2 ft. by 1 ft. 4 ins., 2 ft. 6 ins. by 1 ft. 8 ins., 3 ft. by 2 ft.; these are all laid into stoneware blocks (Jennings' patent).

The stoneware pipes are vitrified, and vary in size from 12 ins. of 1⅛ ins. thickness to 15 ins. of 1¼ ins. thickness.

The sockets are 2½ ins. deep, and they are laid and embedded in 4 ins. of concrete all round. There are manholes at distances of about 300 ft., and flushing shafts at every bend, and the sewers are ventilated through charcoal trays.

The soil pipes from waterclosets are 6 ins. and 9 ins. diameter.

The main drainage works are estimated to cost 150,000*l.*

The waterworks are in the hands of a private company. The supply is intermittent, and is on for about 8 hours out of the 24. It is derived from spring water in the chalk at Havant, about eight miles distant from Portsmouth. The water flows into a collecting reservoir, which holds about 2,000,000 gallons, from whence it gravitates into a pumping well, from which it is lifted by two 80-horse power engines into a service reservoir in Portsdown Hill, situated about 2¼ miles from Havant, whence it is brought into Portsmouth, a distance of about seven miles.

The supply equals about 3,000,000 gallons a day, and is distributed to about 16,000 houses. Cisterns in houses are compulsory.

WORTHING.

The following statement is compiled from information kindly given by the local authorities.

Worthing is a small town on the coast of Sussex, chiefly noted as a watering-place. The lowest part of the town is from 3 ft. to 4 ft. below high-water mark.

The population is estimated, November 1869, to be between 7,000 and 8,000 persons. The area of the district sewered comprises two square miles.

Main drainage works have been executed and a separate system adopted. The main sewers, constructed of brick, are barrel-shaped; they are 3 ft. at the outfall, diminishing gradually to 12 ins. at the highest point.

The branch sewers are glazed earthenware pipes, from 6 ins. to 9 ins. diameter. There are about 1,500 houses fitted with waterclosets. Ventilation is effected through charcoal trays at the manholes, and also through 6-inch ventilating pipes. The down spouts are not connected with the sewers.

Flushing is effected by hose pipes connected with the water mains at the bend of every sewer.

The sewage flows down to a well, which is 30 ft. deep and of an average breadth of 10 ft.

In dry weather about 400,000 gallons, and in wet weather double the quantity, is pumped by two engines, one of 16-horse power, which works an average for 18 hours, one of 20-horse power, which is only occasionally used.

There are two pipes through which the sewage is conducted from the pumping well; one of earthenware, 15 ins. in diameter, for conveyance of sewage for the low level; the other of iron, through which the sewage is forced on to the high level.

The sewage farm at Worthing consists of 90 acres, which slope downward to a brook. The sewage for the low-lying ground, brought down as described above, is received into a cistern on the highest level; from this it flows through a covered main carrier, consisting of a pipe about 1 ft. in diameter. Branch carriers, which are simply earth trenches, communicate with the main carrier, and are distant from each other about 3 rods (49½ ft.). At each junction with the main is an expensive and unnecessary arrangement, consisting of an iron flanged pipe let into masonry.

One field, consisting of 40 acres, is sown with rye grass. Up to September four crops had been cut, averaging 12 tons per acre.

Twenty-seven acres were laid out in pasture, on which cattle were grazing.

On the high level there are 20 acres on to which the sewage is pumped; 9 acres being sown with rye grass, and 11 with roots and cabbage.

Mr. Langley, the able superintendent of this farm, advises that the land should be divided into three portions, and that in the early autumn of each year it should be all ploughed, and the land soaked with sewage for a fortnight.

Then, that the 1st division should be sown with roots, the 2d with cereals, such as wheat, oats, etc.; and the 3d with grass.

By such treatment a succession of crops is ensured to each plot of land, and the soil will yield far heavier crops than if the same crop is repeatedly grown on the same land.

HASTINGS.

The following statement is compiled from information kindly given me by J. Meadows, Esq., town clerk; and from extracts from a report by Wm. Andrews, Esq., borough surveyor; and also from extracts taken from the Municipal Corporations' Directory.

The old town of Hastings is situated in a valley between two hills, whilst the new town extends along the sea-shore, until it becomes incorporated with the township of St. Leonards.

The population of Hastings is estimated to amount to about 30,000, who live in about 4,000 houses; the gross estimated rental is about 20 per cent. more than the rateable value, which is 162,836*l.*; the area of the borough is 1,800 acres.

Main drainage works have been executed, at a cost of 47,030*l.*

Formerly the sewers discharged into the sea by three outlets, but the sewage formed a nuisance on the beach, and an intercepting sewer was consequently begun in 1866, and finished in 1869, the old outlets being still retained as overflows during storms. The sewers carry off both storm water and sewage; they extend for about 12 miles. The main sewers are constructed of brick, and are egg-shaped, while the subsidiary drains are stoneware pipes, and they vary in size from 9 ins. to 5 ft.

The main intercepting sewer from Warwick Square to the Albert Memorial, a distance of about three-quarters of a mile, is 2 ft. 9 ins. by 4 ft., with an inclination of 1 ft. in 794 ft.; from the Memorial to the junction of the Bourne, being a length of 1 mile 200 ft., the sewer is 3 ft. 6 ins. by 5 ft., and has an inclination of 1 ft. in 1,320 ft. From the Bourne to the tank the length is a quarter of a mile, and the sewer 4 ft. by 5 ft., with an inclination of 1 ft. in 1,320 ft.

The sewers are ventilated into the streets through charcoal trays, and they are flushed by salt water, which is impounded at high tide, and allowed to flow through the sewers.

The sewage flows into a tank 210 ft. long by 100 ft. broad, and of a depth of 14 ft.; this tank is capable of containing 1½ million gallons. The bottom of the tank is about 5 ft. 6 ins. above low water at neap tides. Its discharge pipe is a cast-iron 4 ft. pipe, with a fall of from 8 ft. to 10 ft. per mile, which will empty the tank when full in about 1½ hours. The penstock is lifted about an hour before low tide, and the sewage runs away to the eastward.

The water supply of Hastings is derived from surface reservoirs, from springs, and from an artesian well.

The water after collection is forced by pumps up to tanks, about 400 ft. above sea level, and about half a mile from the pumps. The supply is intermittent, and cisterns are compulsory on houses.

A controversy arose some few years ago regarding the contamination of the water with lead, and it was stated that instances of lead poisoning had taken place in consequence of drinking the water that had been stored in leaden cisterns. An analysis of the water so used was made by Dr. Taylor, who failed to detect any appreciable quantity of lead in the water.

CROYDON.

The following statement has been compiled from extracts from the very valuable reports of Baldwin Latham, Esq., engineer to the local board of health.

The town is situated in the county of Surrey, on the east and west sides of a valley, through which the river Wandle runs.

The natural drainage outfalls of the parish are—for the north portion into the Effra river, for the north-east portion into the Ravensbourne, for the north-west and centre portion into the

Streatham Brook, and the remaining portion into the Wandle. The total area of district under the jurisdiction of the local board is 9,521 acres. and the population is estimated at 70,000.

Croydon was almost the first town to put in active operation the Public Health Act, and to try the new system of tubular pipe sewers, although it was a system condemned by some of the ablest engineers of the day. In spite, however, of that condemnation, it is a system that has year by year gained extended adoption, and has completely revolutionized the whole system of drainage throughout the country.

As Croydon was the pioneer in the track in which many towns have followed, many imperfections did of necessity exist in the early works. Of the great errors committed in the early works, one was the too small size of some of the sewers, and another the want of sufficient strength in the sewer pipes themselves, 15-in. pipes having a thickness of but five-eighths of an inch collapsed when laid at moderate depths.

The total absence of any system of ventilation of the sewers was the most grievous error, for no sooner were the original works drawing near to completion than the town was visited by an epidemic of fever, which, though not very fatal, was extensively prevalent. There can be no doubt that this outbreak was due to the entire absence of any system of sewer ventilation. A remedy against the recurrence of such a disaster was at the time proposed, and a system then adopted, but within the last 18 months a more perfect system of ventilation has been devised and carried out. The board have now under their control 75 miles of public sewers of various sizes and inclinations and depths.

The sewage is removed at the outfall into one of two large settling tanks, where it is strained to remove the solid matter, which, after being mixed with street sweepings or earth, and allowed to stand for a few days until quite solid and free from odour, is used on the land. The liquid portion of the sewage then flows on to the farm at Beddington, which is situated about two miles from the town, and covers 280 acres. The soil at Beddington is sandy, upon a gravel subsoil. The sewage flows through open earth channels; the main channel varying in breadth from about 12 ft. to 4 ft. The land is laid out in Italian rye grass and common English grasses. Earth trenches communicate with the main channel at distances varying from 15 to 20 yards apart.

"The sewage," Mr. Latham says, "may be applied during all stages of the growth of the plant, "up to the time of cutting the crop; and it only need be withdrawn from the land for a very "limited period previous to the time of cutting."

In carrying out this system it is absolutely necessary to prepare the land for the reception of the sewage, by carefully levelling it, so that no holes or uneven places may exist. An uneven place will certainly retard the flow of the sewage; and if the sewage should be allowed to stagnate, owing to any unevenness in the ground, it will effectually destroy instead of invigorating the crop.

The sewage of Croydon varies (1866) in bulk from 50 to 120 gallons per head per day of the population.

About six crops of grass have been cut in a single year, and sold for an average price of 5*l.* per acre.

The effluent water flows into the Wandle.

Italian rye grass is the proper crop for sewage, but it dies out every three years, and it requires to be renewed *after*—and this is the first principle in sewage irrigation—the land has been ploughed up.

The water supply of Croydon is derived from three wells, sunk and bored into the chalk.

The original works for water supply consisted in enlarging and deepening a well on the site of the works; the erection of two Cornish engines, with cast-iron equal beams, 30-inch cylinders, and 9-feet stroke, the plunger of each pump being 12 inches in diameter; the erection of two single-flued Cornish boilers, 5 feet in diameter, and 21 feet long, which very shortly after the completion of the works were supplemented by another boiler of the same dimensions; and the construction of a covered reservoir at Park Hill, consisting of a domed chamber, 74 feet diameter, and 35 feet deep, capable of holding 900,000 gallons of water.

A rising main, 12 inches in diameter, was laid from the works to the reservoir. This main also furnished the supply of water to the town.

The original works were calculated to furnish a supply of one million gallons of water per day, and their cost amounted to 26,353*l.* 14*s.* 8*d.*

The rapid increase in the population of the town, and the consequent increase in the consumption of the water, rendered it expedient to provide the means of furnishing an additional supply.

A new well was sunk and bored to the depth of 150 feet, being just twice the depth of the old well. Upon the completion of this well it was found to furnish a supply totally independent of and distinct from the supply of the old well.

The site of the new well was arranged to form the pumping wells, in which the pumps of a large engine could be fixed, and as it was found on the completion of the well that there was no connexion between the supplies of water it became necessary, in order that the engine should raise the full volume of water, that a connexion should be made between the new and old wells.

This was done by means of an 18-inch cast-iron syphon, which performs its work admirably. Provision is made in the machinery for keeping this syphon exhausted of air.

A new engine, which is in the same house as the old one, has been erected. It is a Cornish engine, and has a wrought-iron beam, consisting of two rolled 1½-in. plates, kept apart by cast-iron distance pieces, which are rivetted to the plates. The beam is 38 ft. long, over all 35 ft., from centre to centre; the piston and pumps have each 10 ft. 6 in. stroke; the plunger of the pump is 24 ins. diameter, and the cylinder is 60 ins. diameter; the cylinder is provided with a steam jacket, and this again is felted and lagged; the piston of the engine is supplied with metallic packing.

Instead of the ordinary injection condenser a surface condenser, containing about 400 copper tubes, has been fitted to the engine. The advantages of this description of condenser are, that the water passing into the condenser to condense the steam never comes in actual contact with the water required for condensing; consequently the water passing away is as pure as when introduced, and not being at all contaminated with any oily or any other matter, as in the case with the injection condensers of the old engines, it is at once available for the public baths, and now supplies the swimming bath with warm water.

These new boilers, each 27 ft. long and 5 ft. 6 in. diameter, and each containing a single tube 3 ft. diameter, have been fixed. The furnaces of these boilers are fitted with smoke-consuming apparatus.

An 18-in. rising main has been laid from the new engine to the reservoir, and base of the water tower at Park Hill; 23¼ miles of water mains have been laid in connexion with the new works.

The erection of residences in the higher parts of the parish rendered it necessary to establish a high-level service, consisting of water tower engine and engine house, and a distinct set of mains to these high districts.

The water tower contains a reservoir in the base which will hold 94,000 gallons of water, and which is on the same level as the covered reservoir in connexion with the supply of the town; also a summit tank of wrought-iron capable of holding 40,000 gallons of water. The shell of this tank is made of ¼-in. plates of iron, strengthened at the joints with T irons, and the bottom of ⅜-in. plates. It is supported partly on the external walls and partly on three central columns, one of which serves to furnish a supply to the high level, a second forms the rising main for the engine house, and the third acts as an overflow.

The engine house is situated at the foot of the tower, and contains an horizontal engine and two double-acting pumps, fixed vertically. The steam is furnished by two of Field's vertical boilers.

The new waterworks, including all the mains, cost of water tower, low and high level engines, pumps, engine houses, boiler houses, moneys paid for compensation, and a stock of pipes in hand, has been 42,430*l.* 0*s.* 7*d.*

At the present time (September 1869) 7,697 houses are supplied, and the supply is distributed by 11,005 taps, 9,416 waterclosets, 284 baths, and 27 fountains. The population supplied in 1868 and 1869 may be taken at 45,000 persons, and the quantity supplied at 50 gallons per head per day. The average daily supply has been 2½ million gallons; but from defective service pipes there has been and is an enormous leakage, so that it is estimated nearly 1½ million gallons are daily lost or illegitimately used.

No. 4.

Memorandum by the Army Sanitary Commission on Dr. Macnamara's Fourth and Fifth Reports on the Analysis of Potable Waters in Bengal Presidency.

Dr. Macnamara's fourth report contains the tabulated results of 221 analyses of water used by troops and natives at 27 stations, from Alipore to Peshawur, including several hill stations. The analyses were made in the months from March to August 1868.

His fifth report contains 190 analyses of water sources at 17 stations in the same regions of Northern India, made between October 1868 and March 1869.

The analyses are mostly those of well waters, but a number of tanks and several rivers and mountain sources have also been examined.

The analyses have been conducted by Dr. Macnamara himself, Assistant Surgeon Center, Dr. May, Civil Surgeon Orton, and Dr. R. B. Thomson. The results are similar to those given by Dr. Macnamara in his earlier reports, and the Commission would merely refer to their former minute on the qualities of the different sources as illustrating generally the more recent inquiries.

The fourth and fifth reports are able and interesting, and show increasing practical skill on the part of the analysts. They are valuable contributions to the question of water supply in India, not only on account of the work itself, but because the officers engaged on it have arrived at practical conclusions which go a long way towards the establishment of sound principles of water supply applicable to the various classes of stations in the north of India.

As we concur generally in these conclusions, it will probably be sufficient for the purposes of this minute if we state briefly certain practical points contained in Dr. Macnamara's report and appendices, which we would strongly recommend for consideration by the authorities in India.

1. There is nothing in the reports to show, unless in a few exceptional cases, that the natural water sources in the north of India are otherwise than wholesome. Some of them, indeed, such as the wells at Lucknow cantonments, are remarkably free from contamination. Whether the samples be taken from natural sources in mountain springs or from streams and rivers, from wells in clean ground or at new or recently formed cantonments, or from tanks properly cared for, the results are similar. Nature has added nothing to these waters injurious to the health of men or animals.

It follows that, so far as these analyses have been carried, they show that every station may, from one source or other, be provided with a pure and wholesome supply of water for troops and civil population.

2. Notwithstanding these natural advantages, the analyses show that, with few exceptions, the water supply of stations, especially where the sources have been in use for some time, are more or less impure from contaminating matters not naturally belonging to the source. With the exception of the purer Lucknow waters, it may be stated generally that the amount of readily oxydizable organic matter is ten times the quantity which exists in the water supplied to Manchester, and five times the amount given by Dr. Angus Smith as the one which our present state of knowledge leads us to suppose can be used without danger.

Referring to the apparent minuteness of the quantities, Dr. Macnamara gives a caution which should be kept in mind, viz., that, although the permanganate process shows the amount of readily putrescible matter in water, it by no means shows all the matter that may become putrescible and dangerous.

Many waters give indications of the presence of ammonia, phosphoric, nitrous, and nitric acids.

4. Out of 411 water samples analyzed, the amount of chloride of sodium did not exceed Dr. Angus Smith's standard of less than a grain per gallon in 128 samples, 43 of which belong to one station, Lucknow.

In all the other samples the amount of common salt exceeded many fold the quantity which Dr. Smith lays down as indicating probable sewage contamination when the common salt co-exists with the other impurities mentioned above, and is itself not incidental to the soil.

5. The degree of impurity varies greatly in different stations and in different wells at the same station. Some are comparatively pure, others very impure.

6. The following facts will illustrate this point. At 14 stations out of 54, all the wells, 135 in number, yielded water under Dr. Smith's standard of purity. At five stations there are 54 wells under Dr. Smith's standard; three wells are of good quality, and two river sources are good. There are 11 stations mainly on the hills or on fresh ground, in which, out of 123 sources of supply, 60 fall below Dr. Smith's standard, and 63 are at the standard. The most remarkable instance of pure water in India, or indeed anywhere, is (according to Mr. Orton's analysis) to be found in Lucknow cantonments, in which, out of 52 wells, 43 were of Dr. Smith's standard of purity, and nine only fell below it. In all the pure wells the volatile solids were of very small amount. In scarcely any were there traces of ammonia or nitrous acid, and the oxydizable matter was close to the Manchester standard.

The causes of impurity in the impure Lucknow wells are instructive. In two the ridge of the well was insufficient for protection. In three the ground about was dirty. Out of one well a dead body had been taken the previous year. Out of another, yielding 11 grains of common salt and 15 grains of nitric acid per gallon, two dead bodies, much decomposed, had been taken. Out of another, yielding 71 grains of soluble salts per gallon, of which 20 consisted of nitric acid, two cases of ammunition had been removed.

7. The reporters trace existing impurities to their source more exactly than they did in the reports formerly before the Commission.

In well waters which are the most important, the impurities are traced directly to the state of the immediate subsoil, to the method of drawing and distributing the water, to the habits of Natives employed in this work, or to preventible accidental causes. A few illustrations will show the importance of this subject to the health of troops.

Assistant Surgeon Center describes the existing practice as follows:—

"Our wells are open; water is raised by hand, by leather bags, lotahs, or other vessels, let "down by ropes. Besides bheesties, Natives of all classes have access to the wells. Ablutions "are frequently made at the wells, and wet clothes may be allowed to hang dripping over the "edges of the well. Bheesties carry water for drinking, washing, or for tatties, in the same "mussacks. I make no mention of exceptional abominations I have witnessed, or of the facility "of intentional pollution."

"The strangest things find their way into these open wells. I have seen leathern dolls and "ropes frequently, rags frequently, two blankets, bones of a bird, bones of a dog, bottles, "earthenware, pice. There is often a black compôt composed of decayed straw, leaves, &c., "usually swarming with life; a large number of ropes and vessels that may have been lying on "very dirty ground or in very dirty huts are daily dipped into the water."

Besides surface slopping finding its way back into the well, a not unfrequent source of impurity in the best wells appear to be the overflow of washings of the feet of the water drawers back into the well. In the process of drawing, Dr. Center says that "each bheestie lowers his doll four or five times to fill his mussack, which he then carries off."

Dr. Orton writes,—"The quantity and variety of foul and contaminating matter which has "been removed from many wells is almost incredible, embracing dead bodies both of human "beings and animals, gunpowder, saltpetre, shots, shells, and filth of every and the worst "description."

8. With reference to the remains of dead bodies found in wells and tanks, it appeared of importance to enquire what might be the probable extent of this cause of impurity, and on this point the following information is abstracted from the latest printed mortality returns.

It is stated in the report of the Sanitary Commissioner for Bombay, 1868, that during that year, within the different Collectorates of the Presidency, 222 persons committed suicide in wells, and 35 in tanks, and that 879 were accidentally drowned in wells and 472 in tanks. Hence, 1,608 human bodies were taken out of water sources in one year (besides unknown deaths by accident or suicide), and of these 1,101 dead bodies were taken from wells. All the deaths from drowning in the Bombay returns were in wells and tanks.

During the same year no fewer than 4,308 deaths from drowning took place in Madras Presidency, but the places of drowning are not given. Dr. Planck, the Sanitary Commissioner

for the North-West Provinces, in the Mortuary Returns for 1867, shows that there were 2,386 persons drowned in his district during that year. The place of drowning is not stated.

There are no similar returns for other parts of Bengal Presidency, but we have already seen that dead bodies were taken out of wells in Lucknow, the water of which was more than usually rich in nitrates.

Some time since a letter was laid before us, in which it was stated that human bones belonging to numerous dead bodies had been taken out of wells at Delhi in the process of cleansing the wells. It is not unlikely, from these facts, that drowning in open unprotected wells is one efficient cause of water impurity in India.

9. In some cases the added impurity is traced to foul, wet ground about the well's mouth. In others infiltration of impure water from an impure subsoil into the upper part of the well has been distinctly traced.

In others latrine infiltration, by means of the natural dip of strata, has passed into wells. In one instance a foul water supply, drawn from the bottom of a tank, was converted into a pure water supply by cutting a foot or two from the lower end of the pipe through which the water was lifted. In another instance two water sources close to each other, from one of which water was drawn by a pump, and from the other by hand, in the usual way were compared, and it was found that the pumped water contained considerably less of certain kinds of impurity than the hand-drawn water.

It has been shown also that the noxious practice of burying filth in pits, amongst other dangers, tends to increase the impurity of water sources.

Dr. May, in his report on Morar, states that he regrets to be constrained to withdraw a previously expressed opinion as to the possibility of obtaining a pure water supply from the river, because, since the opinion had been given, filth pits had been formed in the river bank.

10. It appears that the present custody of water sources in stations is scarcely satisfactory. Dr. Center describes it as follows:—

"The water supply of a regiment, so far as I have seen, is theoretically in the hands of the "Quartermaster. By him it is deputed to the Quartermaster-Sergeant. The latter is burdened "with office work, and deputes it to his assistant, who also looks after the conservancy. He sees "that a sufficiency of water at least is brought. Native troops are allowed to draw water where "and how they please."

"At present the drawing and distribution of water is in the hands of Natives, ignorant and "careless of all cleanliness beyond hereditary ideas of their castes. If a bad source be near and "convenient, it is certain to be more or less used if the good be further off."

Dr. Center adds, "In short, we are nearly in the same conditions as regards water supply as Natives have been for the last thousand years."

He argues most properly, that if two bodies of men are placed near each other, or if a large Native population is within or near a cantonment, the water question is the same for all parties. All must have a supply of pure water, because disease, if it breaks out in one part of the population which has bad water, will not spare the other part because it has good water.

11. In one or two of the reports there are opinions as to the relation of impure water to disease, which appear to have arisen from misconception of the part which impure water plays in the economy.

There are instances, no doubt, of quick water poisoning where numbers of people have been attacked with various types of fever and bowel disease immediately after drinking polluted water, but these are comparatively rare, and their non-occurrence when impure water is used is no reason for considering the water as safe. Impure water generally acts much more slowly, and shows its effect not so frequently by causing sudden and rapidly fatal illness as by predisposing the constitution to endemic or epidemic diseases when these are in the vicinity.

There are well-known instances in which large numbers of people had been in the habit of using impure water, apparently without injury until cholera came and swept them away.

12. The action of ordinary barrack filters is still very unsatisfactory, and appears, under certain conditions, to add to the impurities already in the water. It is stated that the water-skins for supplying filters are sometimes allowed to lie on the ground for a considerable time before they are emptied in the slow process of filtration. There is an improved filter described by Dr. Macnamara, which promises well, if it escape the usual fate of small filters in not becoming clogged too soon for efficient use.*

13. The following practical suggestions in the reports are important, and, so far as they go, in conformity with sound principles of water supply:—

(1.) All bad water sources to be abolished.
(2.) Deepening wells to reach water-bearing strata.
(3.) Cleansing the ground round wells, raising the sides, covering wells, and excluding surface and subsoil drainage from them by puddle or concrete, or both.
(4.) Abolishing drawing of water from wells by vessels and ropes and the substitution of pumping power instead.
(5.) Abolishing leathern vessels and substituting iron vessels for carrying or storing water, or laying on water by pipes wherever practicable.
(6.) Filtering water through sand on a large scale, instead of trusting to ordinary barrack filters.

We would remark, in conclusion, that the main principles which ought to be kept in view in dealing with defects in water supply brought out in these reports will be found in our "Suggestions" for the sanitary improvement of Indian stations.

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* Some remarks by the Army Sanitary Commission on the filter designed by Dr. Macnamara, with suggestions for its improvement, have been transmitted to the Government of India (September 1870).

It is evident from the results of the inquiry, that the question of preserving the purity of water sources is a very large one, and that, so far as the Native population is concerned, this must be done mainly by the people themselves. Possibly some simple published rules might be useful in leading to the exercise of more care.

In so far as regards contonments, the evidence all goes to show the necessity, under existing circumstances, of selecting the best wells, cutting off the immediate subsoil drainage from them, raising the sides of the well, and covering the mouth with a locked cover, drawing all water from wells used by troops by pumps, and, until water is laid on, conveying it for use in metal vessels. These measures need not be costly.

The great protective remedy must be sought in well ordered and unceasing care. No works and no amount of outlay will render care unnecessary.

War Office, 8th July 1870.

No. 5.

Memorandum by the Army Sanitary Commission on Dr. Normandy's proposal for supplying Aërated Distilled Water to Indian Stations.

Dr. Normandy's process for preparing agreeable wholesome drinking water from sea or other non-potable water has been long in use, more especially on board ship, where its merits have been fully recognized.

The question referred to the Army Sanitary Commission by the Secretary of State for India regards the possibility of introducing Dr. Normandy's apparatus into Indian military stations, where, from local circumstances, it may be impossible to obtain natural water of sufficient purity for drinking and cooking purposes.

The Commission entered into communication with the company manufacturing the machines, and, besides obtaining documentary information, visited the works and saw two machines of different dimensions in operation. The result of the inquiry may be briefly stated as follows:—

Water distilled by the ordinary process, viz., by a boiler for generating steam and a worm for condensing steam into water, is open to these objections,—

1. The entire heat of the condensed steam is lost.
2. The water obtained from the condensed steam is very apt to carry with it from the boiler organic impurities, which give it a disagreeable flavour.
3. This water is destitute of air, which it has lost in the process of boiling, and it is hence flat and vapid to the taste, besides being somewhat heavy if drunk in quantity.

These objections may be, to a certain extent, removed by exposing the water to air, especially when being agitated. But on board ship, and in doubtful places, the water may absorb air which is not pure.

Dr. Normandy's apparatus removes all these objections, in a very ingenious way, by a machine which uses the waste heat of one or more successive condensations for the purpose of increasing the product of distilled water. He provides that the air displaced in the process of boiling shall be replaced in the process of condensation by another equivalent of air disengaged from the condensing water. He cools the distilled water down to the temperature of ordinary water in the outer air, and he removes the taint of organic matter from the distilled water by passing it through a filter of animal charcoal, in which it is oxydized by the excess of oxygen in the distilled water over the amount in ordinary spring water.

From this filter the water is drawn cold, pure, and well aërated.

The entire process is in strict accordance with scientific principle, and although the apparatus appears somewhat complicated, it has been found to be quite simple in use.

The whole is constructed of iron, with screw joints, in order to avoid the risks of soldering or brazing. The apparatus is cased in wood, to save heat.*

The resultant distilled water was pure, cool, and agreeable to the taste as any pure spring water; and analyses made of it by Drs. Letheby and Noad state that it is "absolutely free from organic matter."

It was considered desirable, nevertheless, that water samples should be taken in the usual manner for analysis, and sent to Woolwich for examination. The following are the results,—they are interesting, because they show the probable influence which Dr. Normandy's process would have in purifying waters of the Indian type.

Water for supplying the distilling machine is raised from a well in the manufactory, which is enclosed in a dense neighbourhood of houses. The well is 18 feet deep from the surface to the bottom, and usually contains four feet of water. The strata supplying the well consists of gravel and surface earth, resting on blue clay, which forms the bottom of the well.

Mr. Abel's analysis shows that water drawn from this well contains 45·15 grains of solid matter per gallon, of which 0·70 grains consist of volatile organic matter. Nitrogen in the form of nitrates and nitrites exist to the extent of 0·75 grains per gallon (equivalent to 2·9 grains of nitric acid per gallon). There was also ammonia present to the extent of 0·0093 grains per gallon.

This water, after passing through the distilling apparatus and animal charcoal filter, gave the following constituents.

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* Dr. Normandy in a subsequent letter (31st August 1870), states that "many years back" the whole apparatus was constructed of iron; but "it is not so now, as all internal tubes are made of tinned brass."

The total solids per gallon were 4·80 grains, chiefly carbonates of lime and magnesia, and phosphate of lime, dissolved out of the filtering medium.

There were no nitrates or nitrites in the water, and the volatile matter amounted to 0·12 grains per gallon, also derived from the filter. Ammonia, to the extent of 0·033 grains per gallon, was also found in the distilled water, a greater quantity than in the well water. Mr. Abel attributes its presence to its volatility enabling it to pass more readily by distillation, and thus becoming concentrated in the earlier portions of the water.

The effect of Dr. Normandy's process on this water may be briefly stated as follows:—

1. All the solid matter in the well water is left behind in the process of distillation, and the distilled water, in passing through the filter, takes up a quantity of innocuous solid matter, equal to a tenth part the amount existing in the original water.
2. All the nitrates and nitrites are left behind in the process of distillation.
3. All the volatile organic matter in the original well water is left behind, and its place is supplied by volatile matter from the filter to the extent of one-sixth part of the original amount. Mr. Abel attributes the total absence of organic matter in the analyses of Drs. Letheby and Noad to the filter having been in previous use, so that the whole amount of volatile matter in it had been dissolved out by the water in passing through it.
4. The quantity of ammonia is apparently increased, but this arises from the concentration of volatile products in the first portions of water distilled, and is usually disposed of by rejecting these portions.

In none of the Indian waters hitherto analyzed has the quantity of ammonia been so great as to indicate risk of impurity from concentration. Although the fact itself shows that highly ammoniacal waters might possibly become disagreeably tainted by concentration of ammonia in passing through Dr. Normandy's apparatus.

Mr. Abel's analyses show that Dr. Normandy's process renders impure water fit for use.

As regards the applicability of this apparatus for supplying drinking water for Indian stations, we would remark:—

1st. That there is no apparent reason why the apparatus might not be transported and erected at any station.

2d. That if an apparatus were so erected, it would be advisable to provide an attendant for it conversant with the construction of the machine and how to work it, and able at the same time to execute repairs.

3d. These two conditions being admitted, the question is narrowed into that of prime cost, working expenses, and cost of fuel. The last is the most important, and we have been furnished with the following data by Dr. Normandy, showing the probable amount of fuel required.

In the usual way, one pound of coal evaporates six or seven pounds of water,* but in the process of condensation the whole of the heat latent in the steam is passed into the condensing water, and is consequently lost.

Dr. Normandy, by using this latent heat in a peculiar way, causes it to evaporate an additional quantity of water. He boils part of the condensing and cooling water, and in this way obtains an additional quantity of steam. The whole steam of the first distillation, with the addition of the steam generated by its latent heat extricated at the moment of condensation, increases the amount of distilled water to from 12 to 14 pounds of water distilled for every pound of coal consumed.

Every pound of coal will, hence, furnish about a gallon and a half of water.

Dr. Normandy states that an apparatus 4 ft. 8 in. high, 3 ft. 5 in. long, and 28 in. wide, produces 24 gallons of fresh water per hour, or 500 gallons a day. There was one apparatus at work on the premises, stated to be producing twelve times this quantity.

But it must be remembered that a considerable amount of condensing and cooling water has to be supplied to the machine.

Every gallon of water condensed requires six gallons of fresh cold water to be passed through the condensers, and this water must either be obtained by gravitation or be raised by pumping. One steam boiler would, no doubt, answer for distilling and pumping, and if the ordinary water supply of a station were raised by steam power, the same boiler and pump might supply the steam to be condensed, together with the condensing water.

The amount of coal for steam power would have to be added to the amount stated above, as necessary for evaporating the water to be distilled in all cases where a head of water was not available.†

Leaving this cost of fuel for pumping aside, and supposing that a station of 1,000 men had to be supplied with drinking water only at the rate of a gallon a day. The amount of fuel required for 1,000 gallons would be from 600 to 650 lbs. of coal a day, or double this weight of the best burning wood.

The question, then, is mainly one of fuel. There can be no doubt of the excellency of the

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* The relation of fuel to evaporation is generally estimated as follows:—

1 lb.	of	coke	evaporates	9	lbs. of water.
1 „		coal	„	9	„ „
1 „		slack	„	4	„ „
1 „		oak wood	„	4½	„ „
1 „		pine wood	„	2½	„ „

† On this point Dr. Normandy observes (letter, 31st August 1870) that "as the steam so employed is also condensed into drinking water, the coal so consumed increases the yield of condensed water, and is therefore economized."

water produced by the process, and of its applicability to any station. But the cost of fuel would amount to a large water rate. The process might be, nevertheless, adopted if wholesome water from other sources, or by less costly methods, were unattainable.

On board ship, or for the use of sick in hospitals, for whom a purer water was required than could be obtained in the locality, the cost of fuel would, no doubt, be counterbalanced by the greater advantages obtained in using Dr. Normandy's apparatus.

But the analyses of waters at present being proceeded with in India show that the impurities in existing sources admit of removal by other methods. The unwholesome character of many of these waters is mainly due to surface and subsoil impurities entering wells at stations. If these sources of impurity were cut off, and the surface around wells protected from nuisance, or if new wells of improved construction were dug in clean ground when needed, there is every reason to expect that simple sand filtration would render the water supply of Indian stations fit for every sanitary purpose.

War Office, 18th July 1870.

No. 6.

Memorandum by the Army Sanitary Commission on Dr. Bryden's Report on the Cholera of 1866–68, and its relations to the Cholera of previous epidemics in India.

This Report is a valuable contribution to the epidemiology of India. It contains a large amount of extremely interesting detail on the subject of cholera, extending over many years, including the first connected view of epidemics of cholera in Bengal, with detailed statistics, for British and Native troops and for jails.

The statistical data are deficient in some necessary particulars. For instance, there are no statistics of cholera among the Native population, such information not having been in existence, and there are in the Report no detailed statistics of cholera for Bombay and Madras Presidencies capable of being usefully compared with these for Bengal. Without full statistical information, such as we have asked for in our Instructions for the Indian Cholera Enquiry, the law of movement of cholera cannot be accurately arrived at, and the absence of these data renders it necessary for us to suspend our judgment on Dr. Bryden's views for the present.

The general statistical arrangement adopted by Dr. Bryden includes the following data for British and Native troops:—

1. Years of epidemics.
2. Stations attacked in each year.
3. Strength of troops at each station.
4. Monthly admissions and deaths at each station.

The jail statistics include corresponding data, and are partly placed in the text.

Besides these general tables, there are numerous summary and analytical tables giving the details day by day of specific outbreaks of cholera in regiments and jails, and showing the death rates to strength and to cases.

A few tables showing the influence of rainfall are introduced, but the meteorological data are generally deficient.

There is little or no information on the sanitary condition of stations.

The influence of meteorology on the progress of cholera is fully acknowledged, and the probable effect of bad sanitary condition and locality in augmenting the severity of attacks is admitted, as is also the influence of personal communication. But all such influences are considered by Dr. Bryden as subsidiary and subordinate to other laws of epidemic movement.

The view generally held by the author on this point resembles that held in Europe, viz., that there is a movement of epidemic cholera independent of all conditions, but the existing state of sanitary improvement in India does not yet appear to have shown to what extent the fatality of epidemics among a population depends on the conditions under which the people live, and hence Dr. Bryden subordinates the conditions to the general law of movement, which his report is intended to illustrate.

The law of movement is arrived at through the statistical data.

From what has been already said respecting the nature of these data for regiments and jails, it will be seen that the dates at which cholera has appeared at any station or jail over the North of India can be obtained, and in this way the movement of cholera in time and space from its beginning to its termination, so far as regards stations at least, can be shown. But without the evidence which would be afforded by statistics from other Presidencies and Governments, including statistics of the Native population, it is evident that the data from regiments and prisoners cannot by themselves be accepted as affording all the information required on the movement of an epidemic. The military or jail statistician may be able, in his own estimation, to fix the precise date of the arrival of an epidemic, from his hospital books, while cholera may have passed the locality long before, and be many miles ahead in its course among the Native population. A similar remark applies to the termination and resuscitation of an outbreak. Again, while the statistician in the North of India may be dealing with one group of facts, there may be phenomena in progress in the South which would materially influence his conclusions.

We have stated in our "Instructions" what appears to us to be the only true principle on which such an investigation can be carried out, as follows:—"Epidemics seize on all classes of the "population, and no trustworthy information can be obtained regarding the movement of epidemic "cholera except by including all classes in the same general statistical inquiry."

Taking Dr. Bryden's data as they are, we shall next proceed to state generally the principles at which the reporter has arrived. But in doing so, it is necessary to premise that, from certain obscurities in style in parts of the report, it is not always easy to follow the author's reasoning.

A line drawn along the 86th meridian of east longitude, from the mouths of the Mahanuddy to the roots of the Himalaya, and another line parallel to this, drawn from the north-east angle of the Bay of Bengal to the Himalaya, will form the western and eastern boundaries of a great tract of country with an area of about 122,500 square miles, having the Himalaya for its northern, and the sea for its southern limit. It is the country of the great waters, and contains within it the deltas of the Mahanuddy, Ganges, and Bramahpootra.

This great district is, in Dr. Bryden's view, the perennial home of Indian cholera. It was first recognised as a mortal disease within this area. It always exists in its endemic condition within this endemic country. It never dies out, it appears and disappears at different points, and at different seasons, and sometimes even within this area, it becomes epidemic, without necessarily passing over the ordinary endemic limit. Its climatology is peculiar. The whole region is under the influence of the sea board. It is a region of perennial moisture, from drainage of its own hills and from river outlets. Its rainfall is double that of any other province in Bengal Presidency. It receives the full force of the monsoon. Ground moisture is always within a few feet or inches of the surface. Vast tracts are under water every year until the cessation of the monsoon and the fall of the rivers permits the ground to rise above the water. "It is with the inundation of these tracts that cholera disappears; it is with their "re-appearance that cholera re-appears upon the diluvial soil and districts adjacent, immediately "invaded by it."

Besides cholera, the population of this endemic area suffers intensely from the whole group of miasmatic diseases and their consequences.

It may be stated here, that Colonel Henderson showed, that of the third of the Bengal Native Army serving in Bengal proper, the mortality was greater than of the two-thirds occupying the plains to the north-west.

It is the weak point, so to speak, of India, and from among its teeming population spring up those "bodies of cholera," as Dr. Bryden defines them, which overflow the boundary from time to time, and commence their destructive march towards the north-west, or west, or south-west, east, or north-east, overflowing at last the boundaries of India and invading the regions of Asia, Africa, and Europe which happen to be in their course.

Much cholera within the endemic area bodes danger to the districts beyond it.

Little cholera within the area is unfavourable to epidemic advance.

Dr. Bryden appears to hold the view that all cholera occurring outside the endemic area is invading cholera. It is a cholera which originally came from the endemic area. It may have apparently disappeared and died out, and its re-appearance, if this takes place, is simply a revival of the original body of the invading cholera. Such a revival outside the endemic area may itself become the starting point for further progress of cholera into the regions beyond.

India is thus to be considered as divided into an endemic area and epidemic areas. The phenomena may differ in the epidemic areas, but they are to be considered as epidemic phenomena nevertheless.

In the present state of knowledge, Dr. Bryden considers that the ultimate cause or *materies* of cholera, whatever this may be, comports itself more like an organized vitalized body than anything else. That it has a period of growth, existence, decay, re-vitalization, and death, and that these states are under the influence of time, place, and atmospheric conditions.

Hence he holds that when any station or district, outside the endemic area, is attacked with cholera, with intervals or seasons of entire cessation, the fact is not to be interpreted as showing that cholera is endemic in the station or locality, and has broken out afresh at each increase. He holds that these variations in intensity are influenced by season or by monsoon influences, or by rainfall or winds, but that they are all part of the original epidemic invasion of the country.

The epidemic itself is made up of these periodical appearances and disappearances, and the *materies* of which it consists may be augmented from time to time by fresh invasions from the endemic area.

The direction which any epidemic may take depends on the point at which cholera overflows the endemic boundary. If this is towards the north-west it would follow the Ganges valley upwards. If towards the west, it would seize the Hazareebagh plateau, and proceed westwards. If towards the south and west, it would cross the country towards Bombay.

Cholera epidemics proceeding westward would continue their course until met by the south-west monsoon, and would then be turned northward by the atmospheric influences.

The arrest of cholera at any part of the Indian frontier will depend on the strength of the body moving, and on conditions favourable or unfavourable to its onward progress. It might stop anywhere when exhausted.

A westward moving cholera is the one which under favouring conditions would pass into Arabia, Africa, and Southern Europe; while a cholera moving to the northward would invade Persia and Russia.

Dr. Bryden considers that the whole bearing of the cholera miasm has a remarkable resemblance to that of the miasm producing malarial fevers, only that it has its own specific character. He holds that cholera miasm may exist without population. That the existence of population is only the condition under which its presence is manifested; that it will cross unpeopled deserts and

attack the districts beyond, if lying in the direction in which it is progressing, and hence that all attempts to arrest its course by quarantine must necessarily be futile; that once started on its course it must fulfil its life period, which, for Northern India, appears to be four years.

There is a most interesting series of maps in the Report, illustrating the laws of progress of cholera as deduced from the available statistics over the north-west and west of India.

These maps show cholera always present within the endemic area already described. In the first year of its epidemic progress it is shown as overstepping the endemic boundary, and occupying a certain region of country to westward. Next year, as occupying more ground; the third year, as still progressing, but occupying some of the older ground with less intensity, and during the fourth year reaching its most distant limit from the endemic boundary, while the district immediately outside the boundary which was first attacked is free or nearly so.

The next epidemic shows a fresh outbreak on this exempted district, and then a progressive course west and north-west as before for the next four years.

Dr. Bryden appears to consider that the force which moves an epidemic of cholera is the wind. He doubts altogether the alleged fact that an epidemic has ever progressed in a direction contrary to the wind; a resuscitation of cholera in any direction contrary to that of the wind would, in his view, depend on some other cause, possibly a re-vitalization of part of an epidemic which at the very time is moving with the wind.

The course taken by the epidemic in any particular district or province will be modified by local geographical or topographical conditions or by meteorological causes of a temporary nature, but all will be subordinate to the great onward primary movement and the force which guides it.

Among subordinate conditions influencing the local course and local severity of an epidemic progressing in obedience to the great primary movement, Dr. Bryden ranks all those causes included under local sanitary condition, local topographical causes, such as wet or marsh land, local rainfall, changes of temperature, great stillness of atmosphere, personal communication, bad personal habits on the part of troops, intemperance, general want of cleanliness, fatigue, terror, alcoholic poisoning, and the like. He adduces cases which appear to him to prove communication from persons to persons of cholera; but communication would not, in his view, influence the movement of the epidemic itself, which is subject to other laws altogether.

On the other hand, he brings forward long experience in the hospitals of Calcutta within the endemic area, and also of hospitals elsewhere, to show that apparent communication of cholera from affected patients to attendants or to other patients is a rare occurrence, if it ever really takes place.

He calls in question all the recent popular theories of epidemic cholera, and shows that none of them can account for the facts of epidemics. He shows that the dry-earth system, from which so much was expected on account of its supposed more complete disinfection of cholera excreta, had led to no apparent result as regards this disease. He sets aside the decision of the Constantinople conference regarding the movement of cholera, as not being in conformity with facts. Dr. Bryden adduces some most interesting, though melancholy, facts, showing the influence of cholera on different races attacked at the same stations and at the same dates.

The general results are as follows:—

Attacks per 1,000:	
European troops	89·20
Native troops	9·56
Died per 1,000:	
Europeans	53·68
Natives	4·11
Died out of every 100 cases:	
Europeans	60·19
Natives	43·02

Goorkhas suffer even more than Europeans from cholera.

These figures represent the terms of the great problem which has to be studied and solved in India.

If cholera depends on a specific cause, what is the reason that it is 13 times more fatal to one class of men than to another? And can we by any procedure reduce the mortality among British and Native troops serving at the same station to the same figure?

Dr. Bryden makes a few important suggestions, and brings forward a few facts on the subject which merit consideration.

The history of cholera and its origin within the endemic area has never been studied. This should certainly be done at once. It would be a special application of our instructions if it were undertaken.

Dr. Bryden has adduced strong reasons for anticipating that the severity of epidemics in India would be materially diminished by attacking cholera in the endemic district. If the waters of this great area were brought under some control; if wet parts were drained; if the localities where cholera is ever present were specially dealt with; if above all things this rich province were to be placed under improved culture and its malaria exchanged for useful produce, should we have reason to anticipate less cholera, or even its extinction?

This is a question to be specially dealt with in India; it can only be hinted at here as an apparent induction from Dr. Bryden's facts.

Another striking class of facts is the exemption from cholera of well wooded districts, and increasing liability to the disease apparently in proportion to the denudation of the country.

Allied to this class of facts is the practice successfully followed by Native villagers of flying to the jungle for safety during cholera seasons.

The greater subdivision of Native than of European regiments, from the practice of Native hutting, is another point worthy of notice.

Cholera is stated to have appeared in double-storied barracks in India, but Dr. Bryden shows that for seven years the new lofty barracks in Fort William have enjoyed comparative immunity from cholera.

An important fact, as bearing on the probable effect of keeping masses of men aggregated on a small surface in augumenting the severity of cholera, is that Native troops crowded together in boats appear to suffer as great a mortality as European troops in barracks.

The argument from this class of facts bears on the necessity of separation among men when cholera is expected, sowing them, as it were, broad-cast over the ground.

Dr. Bryden adduces striking proof of great loss of life from increasing the number of men in a barrack during cholera times.

These are the main practical points in the report, which, it must be borne in mind, has for its object ascertaining the laws of movement of cholera, rather than suggesting means of diminishing its mortality. If our "Instructions" for the Indian Cholera Enquiry are rigidly followed, additional light will be thrown on all the questions dealt with by Dr. Bryden, as well as on many other questions beyond the scope of this valuable report, which, in addition to its special object contains a large number of facts of great interest to all engaged on similar enquiries.

War Office, 20th May 1870.

No. 7.

Remarks by the Army Sanitary Commission on Dr. Murray's Report on the Treatment of Cholera.

1. The Commission have examined Dr. Murray's report on the treatment of epidemic cholera with great interest.

It includes points of medical doctrine regarding cholera, which it is unnecessary here to notice, as this part of the subject is at present under inquiry in India.

But it also includes a large amount of practical experience contained in replies by 500 medical officers, who have seen cholera in all parts of India, to special questions addressed to them by Dr. Murray.

The Commission deem it to be of importance to call attention to the leading practical points in these replies and in Dr. Murray's report.

2. The first important practical result is one which confirms all other experience, namely:—

That in fully developed cholera verging towards or already in collapse, medicines are simply of no use: the condition being beyond human aid. Every remedial agent at all likely to mitigate or cure the disease in its advanced stages has been tried and has failed.

Urgent painful symptoms may sometimes be relieved by medicine, but cure of the disease in its stage of collapse is out of the question, unless Nature herself does the work.

3. This result of the inquiry proves that all medical relief which has the cure of cholera for its object must be directed strenuously and systematically against the very beginnings of the disease, for if these are neglected, or if they fail to be benefited by medicine, the patient may be considered as past cure by medicinal agents.

4. There is a concurrence of testimony that whatever may be the cause of cholera (a subject at present under inquiry in India) attacks of the disease are aggravated by defective sanitary conditions such as the following:—

Malaria.
Crowding.
Defective ventilation.
Fairs, feasts, and other concomitants.
Sudden atmospheric changes in temperature, rain, &c.
Damp subsoil, tainted ground.
Impure air from nuisances.
Tainted water.
Imperfect conservancy.
Fatigue and exhaustion.
Careless dietetic regimen.
Unripe food.
Tainted food.

Every agency, in short, which tends to lower the standard of health and excesses of every kind, especially in the use of intoxicating liquors, predispose to attacks of cholera.

5. Nearly all the medical officers are of opinion that cholera can be communicated to unaffected persons by an infected locality, and the opinion is all but unanimous that when cholera invades a station, the safest thing for troops to do is to leave the locality.

6. A large proportion of medical officers express an opinion that the disease is communicable from person to person. This subject is at present under inquiry in India. The chief practicable step on which nearly all are agreed is the isolation of cholera cases.

7. As regards the disease itself, Dr. Murray's report and evidence recognize the following stages or degrees:—

Malaise, generally present, marked by depression of spirits, want of appetite, torpor of the bowels.

When these symptons show themselves great care is required in avoiding all excess, especially in eating and drinking, all fatigue, depressing passions, fear, and the like, and it is at this period that most can be done to prevent cholera from becoming developed. Gentle stimulants and tonics, avoiding fatigue, taking rest, and attending to diet, quinine in moderation during the rainy season, are apparently the most suitable means to adopt. Anodynes, opiates, and carminatives are also useful.

8. If the disease is not checked in this stage or gradation, the *malaise* continues, and there is superadded to it other symptoms, of a more advanced and dangerous character.

These are "a copious light-coloured painless purging," the stools gradually becoming more watery, and at length colourless like rice water, feeble pulse, cold breath, countenance dark, eyes congested, scanty urine, wandering cramps.

Usually this more advanced degree has been divided into two stages, "simple diarrhœa" and "choleraic diarrhœa," but Dr. Murray, looking to the extreme risk of one state passing rapidly into the other, classes them together.

9. All are agreed, that from the moment the slightest diarrhœa appears, even in its simplest and mildest form, and before it has passed into rice-water purging, treatment is of vital importance.

10. During this earliest diarrhœal period of cholera, perfect rest and a judicious use of opiates, combined with aromatics, carminatives, or astringents, dilute sulphuric acid in drinks, and other measures adapted to particular symptoms, appear from the evidence collected by Dr. Murray, to be the most efficacious remedies.

11. In some regiments measures for ensuring the immediate discovery and treatment of diarrhœa are organized whenever danger appears. But this report and evidence show that it is a matter of life and death that sufferers should be brought under treatment in the state of "malaise" if at all practicable, or at least at the very first appearance of looseness of the bowels, and that most efficient and systematic means should be adopted for this object at all stations.

It is in this stage that the least delay in bringing the patient under treatment may place him beyond all hope of recovery.

12. What is commonly called the stage of "collapse" follows the diarrhœal stages.

This is the stage in which almost every remedy and method of treatment has been tried without any evidence of benefit.

13. As in the previous stages there must during collapse be observed perfect rest. Medicines are of no use. There is nothing for them to do. Iced water, ice in morsels, cleanliness, warmth applied externally, avoiding everything likely to agitate or exhaust the sufferer, careful regimen, and waiting the result, may be said to include all that can be done. Doing too much may destroy the last chance of life.

14. If "reaction" takes place this stage gives scope for all the discrimination of the medical officer in guiding his patient through it. Here also rest is one of the cardinal remedies: patients in this state have died suddenly from trivial exertion. Refined and careful management and the sparing and judicious use of remedies are what are most required.

15. The practical results of Dr. Murray's extended inquiry and report may be briefly summed up as follows:—

1st. That the sanitary condition of stations, bazaars, and towns, especially those in the vicinity of troops, should be rigidly attended to.

2nd. That troops should be thinned out of barracks, or removed from stations where cholera has shown itself, or threatens to appear.

3rd. That as cholera is a disease curable by medicinal agents only at its very commencement, the efforts of medical officers should be henceforth strenuously directed to the immediate discovery and treatment of the first traces of indisposition among the troops when cholera is at a station, or in its neighbourhood.

4th. That to enable precautionary measures to be taken with hope of success, the authorities at all stations should be kept constantly informed of the appearance of cholera among the civil populations, even at a distance from their stations.

War Office, 16th March 1870.

No. 8.

Memorandum by the Army Sanitary Commission on Dr. Townsend's Report on the Cholera Epidemic in the Central Provinces and Berars, India, in 1868.

Dr. Townsend's report contains much interesting and useful information regarding the history of cholera in 1868, and the conditions under which it presented itself in his district.

The facts are discussed mainly from a special hypothetical point of view, viz., that cholera is a specific poison, diffused chiefly, if not solely by human intercourse; that it was brought into the district from elsewhere, and was carried about afterwards by the people.

Diffusion of the poison is, however, not believed by the reporter to be sufficient by itself for the propagation of cholera. He considers that other personal and local favouring conditions are required before "contagion" can take effect on a population. But on referring to Dr. Bryden's report, it will be found that Dr. Bryden treats the same outbreak of cholera in the Central Provinces in 1868 as nothing more than a geographical portion of a much greater epidemic, extending from the lower part of the Ganges valley across the Central Provinces to Bombay, and as far into the Madras Presidency as Hyderabad.

Dr. Bryden treats cholera in the Central Provinces from the more extended point of view afforded by statistical facts for the whole area covered by the epidemic, while Dr. Townsend discusses the question from the assumed hypothesis that cholera depends for its progress on personal communication.

For all practical purposes, however, both reporters arrive at the same conclusion.

Dr. Bryden considers quarantine a futile expedient for putting an arrest on an epidemic, while Dr. Townsend, with every desire to make use of efficient quarantine arrangements between affected and unaffected districts, holds that any such arrangements are beset by insurmountable difficulties, and that ineffective quarantine is worse than useless.

We are thus left to deal practically with those conditions which all observers regard as favouring outbreaks of cholera among a population.

Table No. VI. in Dr. Townsend's report gives the mortality from cholera in each circle within the epidemic area of 1868.

The total number of towns and villages within the area is given as 11,176, and the population as 2,994,076.

The towns and villages attacked by cholera numbered 978 = 8·7 per cent. of the total villages.

The population of the attacked villages amounted to 751,246. The deaths from cholera were 9,602 = 12 per 1,000 of the attacked population.

The outbreak of 1868 was, however, only the precursor of the epidemic of 1869, which covered an area containing 30,135 towns and villages and a population of 7,969,801. Of the villages, 4,100 = 13·6 per cent. were attacked in 1869.

The population of the villages attacked in 1869 amounted to 2,169,084. The deaths were 47,848 = 22 per 1,000 of the attacked population.

Dr. Townsend gives an interesting account of a number of these attacks, and he analyzes with much care the facts bearing on the susceptibility of the population.

The report, indeed, contains the best account we have yet seen of the sanitary economy of Native villages, the habits of the people, and the conditions under which epidemic cholera prevails among them. But it would be most desirable in future reports to give this information with greater minuteness of detail, in order that the conditions under which cholera manifests itself in Indian villages may be fully known.

It appears that villages in these provinces are much of the same character. They are all more or less filthy. Not unfrequently men and animals either occupy the same houses or people live close to cattle. There are no public arrangements for cleanliness or removal of nuisances injurious to health. The people foul large areas of ground round the villages and near water sources. The water supply is drawn mainly from shallow wells, sometimes from deeper wells, sometimes from tanks not sufficiently protected from impurities, sometimes from stagnant surface pools, or from beds of drying up streams, and into all these water sources filth deposited in their vicinity may be washed by the rain. Or water is drawn from rivers in which human bodies are occasionally found.

Striking illustrations are given in the report showing the influence of impure water from such sources in developing cholera.

This experience as to the fatal effects of impure water is similar to that obtained in Europe, although on a more extended scale.

The villages appear to be all much of the same character as to their general insanitary conditions. But, following the usual epidemic law, all of them do not suffer at the same time or during the same epidemic. Why this should be is an unknown element in the history of cholera. It is worthy of remark, however, that while the average population of the villages in the attacked circles was only 268, the average population of the attacked villages in these circles was 768.

Several instances are recorded in which partial cleansings, and other simple sanitary improvements of towns and villages, apparently diminished liability to cholera where these had been carried out. But the most efficient protection appears to have been afforded by deserting attacked localities for a short time, a sufficient proof of the influence of unhealthy locality in predisposing to attacks of cholera.

The beneficial influence of removal was also observed in instances where gangs of road labourers (among whom the disease first appeared in the district) were attacked. Simply moving along the road appears in such cases to have arrested the disease.

On the return of the local labourers to work, they were placed under strict conservancy arrangements, and purer water was provided. After this was done, they remained free from cholera, although it went on increasing in the district.

Dr. Townsend appears to consider that, other things being equal, the chief determining cause of cholera in these districts was polluted water. This element he considers neutralized advantages of local position and subsoil.

Villages built on bare trap rock, without subsoil and with good natural drainage, suffered in large per-centage, a fact which Dr. Townsend attributes mainly to the water being taken, not from wells, of which there are few or none, but from shallow pools in the rock, much exposed to various impurities. On the contrary, villages built on alluvial soils, with water at 30 or more feet below the surface, comparatively escaped.

He doubts the truth of averments which have often been made as to cholera being dependent on subsoil water for its development, or on subsoil at all, seeing that it existed in greatest intensity where there was no subsoil,—only impervious trap rock.*

We concur with Dr. Townsend in the following practical conclusions of the report. They are all in accordance with sound sanitary principles, and point out some of the things which should be done with these villages.

1. Some system of cleansing and removal of decaying substances is imperatively required.

2. The roads and surface drainage of these roads are very defective, and require to be improved on some consistent plan.

3. One main source of danger lies in the filthy habits of Natives in fouling ground in and around their villages, and more especially in the vicinity of water supplies. It is most advisable that some means should be adopted for improving the habits of the people in this respect.

[So simple an expedient as setting aside an area of ground at a safe distance from rivers, streams, wells, and tanks, and requiring that each evacuation should be covered with earth at once, and the ground periodically cropped, would put an end to most of the risks to health to which these villages are exposed. Properly regulated latrines, the contents of which should be applied to agriculture, would answer the same end.]

4. Providing suitable wells, and protecting them and other water sources from risk of pollution, is also a matter of primary necessity.

Dr. Townsend states, that in 1868 he did not meet with an instance where mortality from cholera approached one per cent. of the population when the only water supply was drawn from a well 30 feet deep, situated at a distance from sources of impurity, lined with masonry in good repair, with a sufficient coping above the surface of the ground, and containing 4 feet of water in the hot weather.

He proposes to adopt one such well, as a standard, for every 150 or 200 of the population, with pumps in the large villages.

[In sinking these wells clean ground should be selected, away from habitations. Thirty feet should be assumed rather as a minimum depth. The depth should be sufficient in all cases to afford a water of sufficient purity, to be ascertained by chemical analysis, and in sufficient quantity for the wants of the population. The well should be lined, and the upper part of the tube covered outside by a layer of concrete. There should be a sufficiently raised coping, with a cover; water should either be drawn by a pump or by a windlass, with an iron bucket or chain. The ground about the well should be paved and sloped away from the opening.]

5. Wherever there are tanks they require to be specially guarded from pollution, as tanks appear to be used for all purposes—drinking, cooking, washing clothes, and bathing, watering animals, and the like.

6. None of these improvements need be costly. Some aid might be wanted by the people, but they might, as Dr. Townsend suggests, be required to supply the labour.

Dr. Townsend considers that in the present state of these villages it would be useless to depend for improvements on any regulations to be left solely to the people to carry out. At the same time, the great numbers in which these villages exist, show how difficult it would be to improve them without the co-operation of the people themselves.

The facts appear to lead to one conclusion, namely, that, while the people should be led to see that the doing of certain things is a necessity of their healthy existence, and while they should be required to do them, there should be strict superintendence kept over them. Dr. Townsend proposes that there should be systematic intelligent supervision carried out periodically by Native Inspectors, who would report annually, and act under European superintendence.

A certain amount of outlay, not a great one, would be required for this purpose, but the increased productive powers of the population, arising from improved habits and better health, would far more than compensate for the cost.

A few well-marked cases might be selected for improvement in the first instance, and in this way experience would be obtained.

8. With reference to the great susceptibility of European troops to attacks of cholera, Dr. Townsend makes the following remarks, which may be useful, as an indication for further inquiry. He says,—

" It is possible that the greater susceptibility of Europeans to cholera may be induced by a " too exclusive use of animal food in the season of the year when decomposition is most rapid,

* Similar instances of outbreaks of cholera in places situated on granite and other rocks have occurred in England.

" when less exercise is taken, and when the elimination of excretal matter from the blood is less " perfect."

The question here raised by Dr. Townsend is one of temperature and expenditure of force, as well as of diet. It is thus stated by the Royal Commission on the Sanitary State of the Indian Army,—" The soldier should either have work or exercise provided, sufficient for his diet; or his " diet should be made to accord better with his sedentary habits" * * * * "the " same diet which may be consumed in the cold season with safety cannot be the most suitable " for heat."

War Office, July 8th, 1870.

No. 9.

LETTER from DR. J. SUTHERLAND, Deputy Inspector-General of Hospitals, Bengal, regarding the Causes of the Epidemic Fever in Lower Bengal, the Means to be adopted to arrest its progress, with Remarks on the health of the people in districts of India irrigated by Canals, and the necessity of protecting the inhabitants of such localities from excessive subsoil dampness, &c.

United Service Club, Edinburgh,
10th June 1869.

SIR,

THE latest newspapers from Bengal report the great prevalence of malarious fever in the lower part of that province, particularly in the districts on both banks of the Hooghly; and it is understood that the occurrence is one that is at present occupying the attention of the Bengal and the Supreme Government. Under these circumstances, as I have given considerable attention to the subject, and have lately visited the localities where the epidemic is now raging, I trust that a few observations regarding the prevailing fever may be of use in enabling the authorities, both in this country and in India, to form a correct opinion of the nature of the epidemic and of the means to be adopted to arrest its progress.

2. The frequent occurrence and great fatality of the fever of late years have begun to have a serious effect on the average longevity and physical well-being of the people, nor is the moral effect of such a calamity to be disregarded. The question naturally occurs to the Native mind, what good have the English done to us? Have not some of their boasted improvements resulted in the physical, if not moral, deterioration of the people in the localities where their most magnificent works exist? Has not the railroad obstructed the natural drainage of the country, and converted some previously healthy localities into unhealthy and deadly hot-beds of malarious fever? Have not our canals created, wherever the irrigation system has been carried out, a deadly miasmatic atmosphere which has destroyed as many lives as would have been lost by the casual famines which swept over these districts? The answer to such statements must be, that there is much truth in them. Imperfect drainage, consequent on our great public works, has been by no means an unfrequent occurrence, and has produced a degree of dampness favourable for the production of malaria, a result that might have been anticipated from our previous knowledge of the conditions under which malarious poisons are generated. But it may be said, that in the portions of Bengal where epidemic fever is most rife there have been no great public works to obstruct the drainage, for example, in Jessore and portions of Nuddea. But this merely shows that there are other important agencies at work, and the chief of these is the silting up of rivers and lakes in the delta of the Ganges and other places; examples of this have come under my own observation in various districts in Upper and Lower Bengal, Nuddea, Jessore, and Rungpore.

3. There can be no doubt that the deposits brought down by the Ganges and its tributaries on their way towards the sea are gradually filling up large low-lying tracts of country and river channels, that will remain for a considerable time in the condition of a malaria producing swamp; this is the state of many tracts in Lower Bengal at present.

The causes which produce these results existed many years before the British held possession of the country, but it is only of late years that their continuous action, through an indetermined period of time, has given them sufficient intensity to produce the wide-spread epidemic at present devastating these districts.

4. One of the effects of the silting up of rivers in Lower Bengal is the extension of the flood line in the inundations taking place in the rainy season; it is obvious that the more shallow the bed of a river becomes, the greater will be the area over which the water will spread during a flood, and the larger the quantity left to stagnate over the lower ground where it has flowed.

5. The means which we have adopted to facilitate intercourse, the construction of raised roads passable at all seasons, have in some cases, doubtless, disturbed the natural drainage of the country, and left water to stagnate in places which were formerly comparatively dry.

6. Should anyone doubt the power of causes similar in all respects to those mentioned to produce such disastrous results, a reference to a report made to the Government of India in 1846, by a committee, of which Colonel W. E. Baker, of the Bengal Engineers, was President, will afford a convincing proof of the fact; the members of the Committee travelled over 1,400 miles of

country, irrigated by the Delhi Canal, &c., and inspected all the towns and villages in any way affected by canal irrigation, and they found everywhere unequivocal evidence that, wherever the subsoil had been rendered excessively damp, there malarious fevers were rife ; in dry localities there was little or no spleen disease (for this was the test used by Dr. Dempster, the Medical Member of the Committee, to prove the existence of malarious fever).

7. In a paper read before the National Association for the Promotion of Social Science, in 1861, this officer states that "Canal irrigation, carried on in the North-West Provinces of the Bengal "Presidency, under certain unfavourable conditions, is uniformly productive of endemic disease, "which from time to time assumes the form of wide-spread and often fatal epidemic."

8. The great prevalence of fever in the Burdwan and Nuddea Districts, in the years 1861 and 1862, led the Government of Bengal to appoint a committee to examine and report on the epidemic. Dr. Elliot, the Civil Surgeon of Hooghly, furnished in the following year an able report on the nature of the fever, and of the state of the towns and villages in which it was prevalent. On a consideration of all the subject, I am now of opinion that too much weight was assigned to the condition of the affected localities as regards cleanliness, and that probably too little importance was attributed to the drainage and state of dampness of the soil of the towns and villages, and places in their neighbourhood; in this report the conclusions arrived at were very different from those of Dr. Dempster ; the latter attributed the great prevalence of the fever in irrigated districts to a soil made artificially damp with canal water. Dr. Elliot, on the other hand, was of opinion that the Nuddea epidemic was caused chiefly by bad conservancy, by the foul state of the tanks in the towns or villages, by the presence of organic impurities; obstructed circulation of air by jungle growing up all round the habitations of the people, and by their filthy habits, &c.

9. In a question of this nature, the general laws that govern the production of epidemic disease will come to our aid. The fever of the Nuddea District was certainly not of the character of typhus or typhoid fever ; it was a disease of an intermittent or remittent type, and such as we knew from experience is usually caused by the emanations from marshy soils ; even if the disease was occasionally contagious, this would not invalidate the proof that its cause was marsh effluvium.

Fevers of the continued tyye, typhus and typhoid, are unquestionably associated with organic impurities, and originate from causes in which animal excreta and other similar agencies (entirely different from the emanations of a swampy soil) play the principal part. Dr. Dempster was therefore, I think, right in assigning the prevalence of the fatal endemic fever to causes entirely independent of the sewage and filth accumulated in towns, the foul water in tanks, or bad conservancy, &c.

10. Having stated my views regarding the course of the prevailing epidemic, or rather endemic (for the latter is the correct term to apply to a fever strictly confined to a limited locality, and produced by causes existing only within the space where it at present prevails (the disease having apparently no power to travel into any district in which this moist condition of the subsoil is wanting) I will here only further observe that a fever similar in all respects to the epidemic now raging on both banks of the Hooghly began in Jessore in 1824 or 1825, and gradually extended itself to the districts farther west; but it is to be recollected that these districts have a striking similarity one to another, as regards drainage, subsoil, water, and general physical condition, and that the endemic having exhausted itself in one locality, by carrying off all the more susceptible, would naturally progress into other districts where it would find fresh and predisposed victims, and all the physical conditions necessary for its spread. Contagion in such a case, it is well known, has no share in the propagation of the disease, although the fever might, under favourable circumstances, attack a few persons in this way who had been much exposed to the noxious emanations of the sick in confined and badly ventilated huts or houses. Such seizures, I believe, occasionally take place, but this was not the way in which the fever progressed.

11. Having considered the cause of the generation of the disease, I shall now proceed to point out the means for averting future outbreaks of the endemic fever.

The Natives, with some justice, I think, complain, that we have assigned too much importance to jungle, rank, vegetation in tanks, and local impurities in their towns and villages ; they have been dismayed by our cutting down more of their trees than they liked, and by our harassing them by sanitary measures which they do not see produce any salutary result. It is evident to them that the cause of the endemic lies deeper, and in this opinion they are probably right. If the disease we had to combat was cholera or typhus, no doubt the sanitary measures referred to would have had the best result, but the fever is the effect of a marsh poison, and to remedy this we must carefully attend to the conditions under which it is produced.

12. I am of opinion that the drainage of the country demands our chief attention if the evils complained of are to be remedied. Much might be done by carefully executed lines of drains, and by greater attention to the watershed, by avoiding most carefully the throwing back of any current of water so as to cause its stagnation in places formerly dry.

Whenever roads have been carried through a district great care should be taken to find if they have not acted as artificial dams, and held back water seeking a lower level; culverts should be constructed in all such cases. Along the line of railway I do not doubt that the necessity for a greater number of such passages for the free flow of water is greatly required, and the partial destruction of some railway bridges by floods in Bengal prove that this was not sufficiently attended to, but when all this is done, there will still remain much swampy and ill-drained land, and for this there is another remedy, which I am not aware has ever been brought to the notice of the Government of India—that is, the digging of deep tanks in all swampy or marshy localities at or near a town or village ; from the earth so obtained the surrounding swamps would be raised till it became comparatively high ground; into these tanks all the drainage would flow ; they should be of considerable depth, and drains should be carried into them in all directions.

14. That collections of pure water, although of considerable extent, are not (*per se*) injurious to health or productive of malaria, is a proposition to which all medical men and others who have given attention to the subject will readily assent; it is only when these artificial reservoirs (tanks) receive sewage or other impurities, or are allowed to be overrun with rank aquatic vegetation, that they become sources of disease. A swamp reclaimed in the way I have proposed would form arable land of a peculiarly rich and productive character, and in any locality where the experiment is carried out of digging tanks in marshy ground, I do not doubt that the result will be a great improvement in the general health of the residents (if the tanks are dug so deep that they will never be dried up in the hot season).

15. If it is objected that digging tanks in marshy land is too expensive for general adoption, I reply that it has not been tried, that the value of land so reclaimed in certain localities, near towns especially, would be so enhanced as to pay a considerable part of the expense of the excavation.

16. The utility of tanks as a means of improving the sanitary condition of a town or district is no new theory; places like the civil station of Burdwan, in Lower Bengal, formed out of rice fields, owe their comparative salubrity, in my opinion, to the number of tanks they contain.

17. When I visited Kishnaghur, in Bengal, on a professional tour of inspection in 1865, I found the inhabitants of one of the suburbs, Baripara, suffering in an intense degree from malarious fever; the ancient, but now silted up, bed of a river bounded the locality to windward; by the advice of the Medical Officer of the station tanks were dug in this swamp, the general level of the marsh was raised by earth obtained in carrying out the excavation; before this was done, the suburb, which contained 8,000 inhabitants, had lost 1,000 by deaths, 5,000 had left the place, only 2,000 remained, and the majority of these were in an extremely sickly condition. I again visited the station in 1866, a year after the tanks were dug, and I found that the place had become comparatively healthy; it was no longer necessary to keep up a dispensary, which had been established by Government on account of the prevalence of fever at Baripara.

18. Several stations in Bengal, Jessore, Rungpore, &c., are so malarious that few of the residents, European or Native, escape the endemic fever; to render such places healthy by the means I have proposed would be an incalculable boon to the unfortunate Civil Officers who have to reside there; they or their families are often prostrated by malarious poison, which it takes years to eradicate (in some cases, even when the affected persons leave the district, are sent to Europe for change).

19. In estimating the effect of obstructed drainage in causing endemic fever in Lower Bengal, it should be recollected that the whole district is formed of sedimentary deposit; everywhere in the delta of the Ganges the superficial surface soil (generally about 10 feet in depth) overlies a bed of clay which is nearly impermeable to water. Dr. McClelland, in his "Topography of Bengal," states that, "without the surface soil, Lower Bengal would be a swamp; without the underlying clay it would be a desert."

20. The Government of India are about to carry out canal irrigation to an extent hitherto unknown in India, but, if great care is not taken, the scheme may prove a perilous gift, for, while it protects the inhabitants from absolute want in the event of the failure of the periodical rain, it may destroy their health, leave them the victims of malarious fever, diseased and wretched, helplessly infirm, to die early, and to leave a weak and debilitated progeny to suffer from the means that was intended to be a benefit and a boon to their country.

Such calamities can only be avoided in irrigated districts by carefully regulating the supply of water, by preventing the subsoil from becoming permanently under the influence of excessive moisture, and by taking care to preserve the permanent water level in wells, in the dry season, some feet from the surface. It is well known that, some places in the North-West Provinces, water is found at a depth of more than a hundred feet; to swamp such localities by saturating the subsoil to excess, bringing the water in wells to near the surface, would be to convert a dry and healthy into a damp and fever-breeding district.

There is, I believe, no insuperable difficulty in carrying out canal irrigation in such a way as will not seriously deteriorate the health of the people; by care it may be productive of infinite good, by neglect it will certainly prove an evil greater than the one it was intended to remedy.

I have, &c.

(Signed) J. SUTHERLAND, M.D.,
Deputy Inspector-General of Hospitals,
Presidency Circle, Bengal.

The Under Secretary of State
for India.

No. 10.

EXTRACTS from Report on Sanitary Works in Turkey, by Lieut.-Colonel E. C. GORDON, R.E.

1. SEWERAGE.

"The large buildings have generally two main sewers, rectangular in section, into which is led the drainage from the privies, lavatories, cookhouses, and wash-houses. As a rule, neither sewers nor drains are trapped, and provision is seldom made for surface drainage."

* * * * * * *

" In all the large establishments, the old, badly constructed rectangular sewers were replaced by egg-shaped sewers of brick on edge in cement, which were trapped, and as much fall given to them as practicable. The sewers, which generally terminated at the summit of the neighbouring cliff, were prolonged to as near the sea level as practicable, and the mouths of all sewers were trapped."

2. Drainage.

" The drains are generally formed of clay pipes, but sometimes they are constructed in rough rubble, in form similar to the sewers described above. They are led into the sewers at the nearest point, quite regardless of the angle at which they enter them. Each privy has its separate vertical pipe, and all these are collected into one drain on the basement level, and so conducted into the sewers."

" Twelve-inch glazed tiles were substituted for the flat-bottomed drains that led from the privies, &c., to the sewers, and the old, porous 12″ soil-pipes in the privies were replaced by 9″ glazed pipes; flushing tanks were also constructed for each block of privies; pans and seats were placed over each privy aperture, and two of these latter on each story were converted into urinals. The fall of all drains was improved and regulated; they were all properly trapped, and manholes were constructed in convenient positions; where necessary, provision was also made for surface drainage."

The forms of the drains were usually altered from rectangular to egg-shaped; their fall regulated, and proper traps provided. The new drains were constructed of brick in cement.

" Glazed soil-pipes of larger diameter were substituted for the porous, unglazed ones previously used for latrines, and, where practicable, the pipes were trapped." (See "A" on sketch I.)

" The new system of drainage carried out in 1854–55 has acted efficiently up to the present time, notwithstanding the apathetic neglect that all improvements of this nature meet with at the hands of the Turkish authorities. No defects are apparent in its working. The old drains, constructed as previously described, are continually out of order, owing to the defects in their form and construction; they are also, as a rule, too near the surface and are seldom trapped."

3. Land Drainage.

" At Hyder Pacha a plot of ground contiguous to the buildings used as an officer's hospital was always in a swampy state during winter. It was found that a fall of about 1 in 600 could be obtained, and drainage works were consequently set in hand, by means of which this wet area was converted into good dry land, the permanent good effects of which exist to this day, the drains being still in active operation."

" *A roadway* also *at Hyder Pacha*, that was impracticable in winter, owing to the marshy state of the ground, was rendered serviceable by the use of faggots, which were placed in large quantities across the direction of the roadway; the first faggots disappeared below the surface of the swamp, but others were added until a foundation was obtained, when layers of 'Macadam' of various sizes were superadded, and the whole was finally covered with fine gravel and rolled. This roadway still exists intact; it has never been repaired since it was first made, and it is one of the driest roads, at all seasons, in the country."

4. Water Supply.

" *Impounding Reservoirs.*—These are placed at as high an elevation as practicable, to facilitate the distribution, which is effected by means of gravitation. They are formed by constructing dams in favourable positions across valleys; all vegetation is removed from the surface up to the level of the top of the dam, and the bed of the reservoir is then covered with a thin layer of lime."

" *Gathering Grounds.*—The most elevated available ground is always selected for this purpose, the surface being left in its natural state."

" *Filtering Arrangements.*—There are no filtering arrangements properly so called, but the system that obtains in the country of conveying the water from the reservoirs to the different points of delivery affords frequent opportunity for the deposit of sediment, thereby cleansing the water to a certain extent."

" Owing to the weakness of the pipes that convey the water from the sources they are unable to withstand much pressure; consequently, where the slope is considerable, columns are erected at irregular intervals (see Sketch II.), up one side of which the water is conveyed and allowed to flow into a small tank placed on the top of the column, from whence it is conveyed by another pipe down the other side, and so on to the next column. The strain is thus limited to that caused by the weight of water between two columns, and little is lost as regards the level, the height of the columns and their distance from each other being regulated by the slope of the conduit. On the more level portions of the conduits similar small tanks are also constructed, but at longer intervals to lessen the pressure on the pipes, and these all help to purify the water by affording opportunity for sedimentary deposit."

"*The volume of water used is* about two gallons per head per diem. It is delivered at the houses by water-carriers, who pay a small sum annually to the Government for license to act as distributors, and who charge for the water they deliver at the rate of about twopence per gallon."

"*How buildings are supplied with water.*—All the large establishments are supplied with water from a distance; it is conveyed to the different buildings in conduits formed of earthenware pipes, about 4″ in diameter and 16″ in length; the fall from the source is husbanded with great care, but it not unfrequently happens that there is not sufficient force to supply the upper stories with water, in which cases the occupants have to descend to satisfy their requirements, as no auxiliary force is applied to send the water to the higher portions of the buildings. It is stored in tanks distributed throughout the establishments at such levels as can be attained by simple gravitation."

"*Improvements in the Water Supply.*—The supply of water was increased by adding the produce of one or two unused springs near the sources from which the then existing supplies were taken. For this purpose the conduits had to be enlarged for a distance of about seven miles. Filtering beds and tanks (see Sketch III.) were constructed near the large establishments, through which all the water passed before entering the buildings. For the lesser establishments temporary filters were constructed by connecting two large barrels at their lower extremities (see Sketch IV.) the one barrel acting as the receiver, the other as the filterer; at the bottom of the latter was placed a layer of small boulders and charcoal mixed, over which was a layer of gravel succeeded by one of sand."

5. Latrines.

"*The Latrine arrangements* were faulty, chiefly through the defects in their system of drainage. A Turkish latrine consists of a large stone about four feet in length, and extending the whole width of the latrine; (see Sketch I.) the front portion of this slab is hollowed out, and the whole surface is arranged in such a manner that all drainage is conducted into a groove that leads back to the soil-pipes; vertically over the entrance to soil-pipe, at a height of about 1′ 9″, is a tap which is supplied with water from the latrine tank, and at which the individual cleanses his person, the water so used passing at once into the soil-pipes."

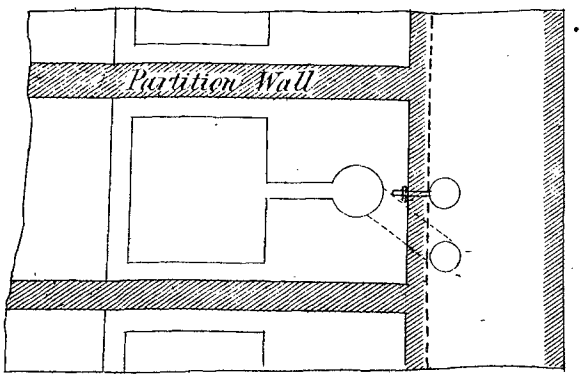
"Properly constructed latrines for Easterns require very slight *flushing*, owing to the peculiar habits of the natives, who use water instead of paper for cleansing purposes; the soil consequently passes through the pipes in a diluted form, requiring but little aid to carry it clear of the drains, where these latter have a good fall. Each privy is supplied with a tank, from which the several ablution taps are fed, the water from each latrine passing direct into the soil-pipes; this, with the water from the lavatories (properly so-called) is found to suffice for all cleansing and flushing purposes, where the privies are used by natives only. For the use of European troops, however, whose system of cleansing their persons differs so materially from that which obtains amongst Easterns generally, it was found necessary to provide some additional means of flushing. This was done by constructing small tanks on the basement level for the lower pipes that ran in a horizontal direction, and, for the vertical soil-pipes, privies, and urinals, by constructing wooden cisterns lined with lead in the roofs; by means of these several cisterns all privies, urinals, drains, and sewers were flushed generally twice every day. (For detail, see explanatory plan and section V. on which the new work is coloured yellow). The water thus used passed from the drains to the main sewers, and it was found that it very nearly sufficed to keep them thoroughly cleansed; the small additional aid that was necessary was supplied from large barrels placed in appropriate positions and filled by hand labour."

6. Cookhouses.

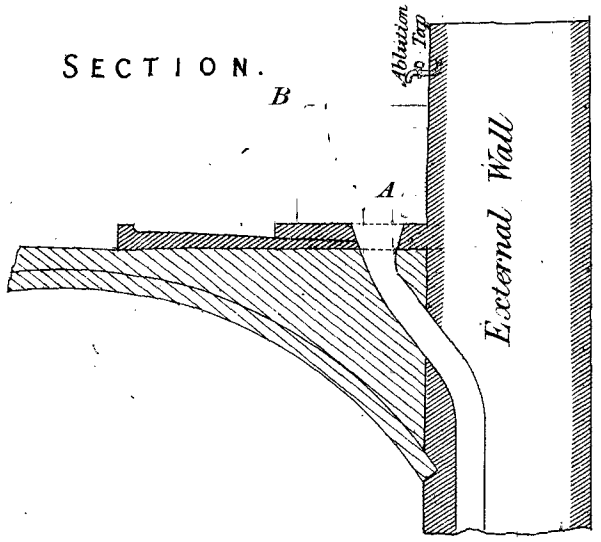
"The fires are fed from the outside, by which arrangement the interior of the kitchen is at all times free from smoke; the boilers extend the whole length of one side of the kitchen; horizontal flues, communicating with the fireplaces, run from each end of the row of boilers, and are led into an external chimney placed against the centre of the side of the building where the boilers are situated." (See Sketch VI.)

SKETCH 1.

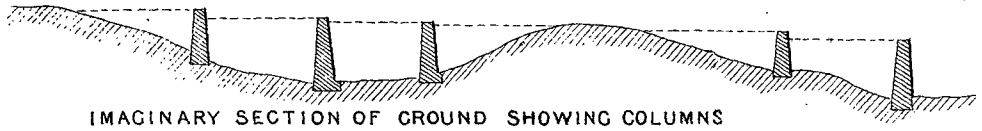
EXPLANATORY PLAN OF A TURKISH LATRINE.



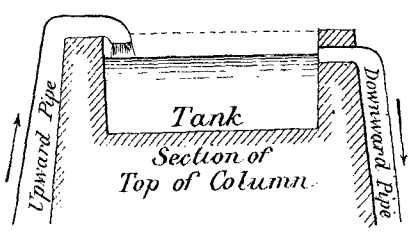
SECTION.



SKETCH II

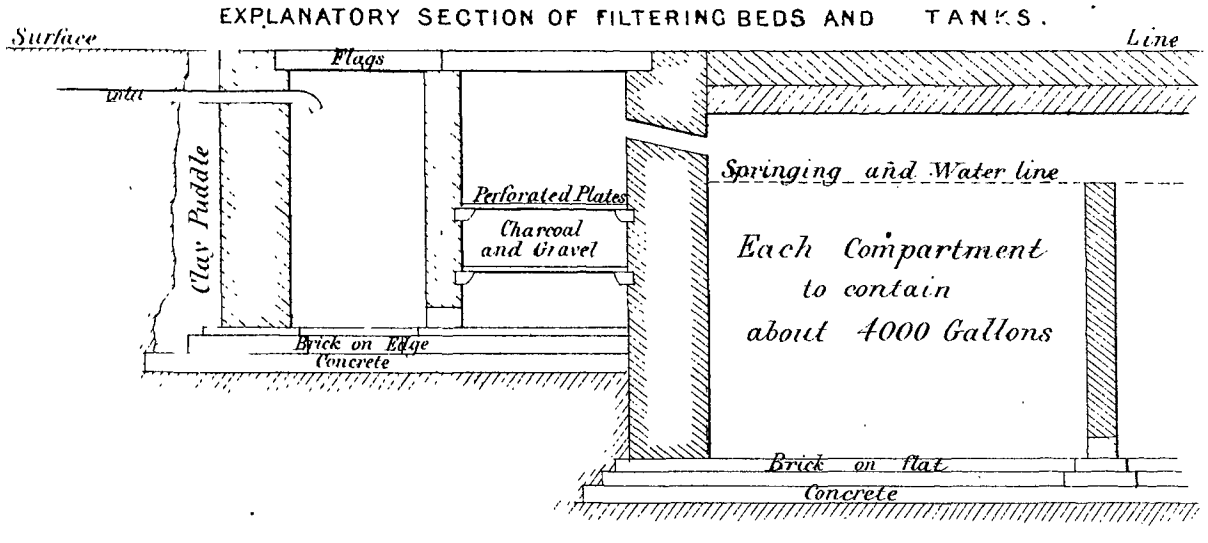


IMAGINARY SECTION OF GROUND SHOWING COLUMNS



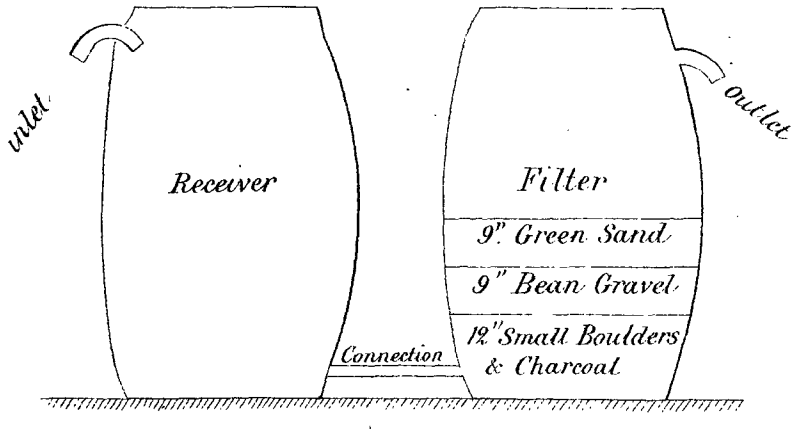
SKETCH III

EXPLANATORY SECTION OF FILTERING BEDS AND TANKS.



SKETCH IV

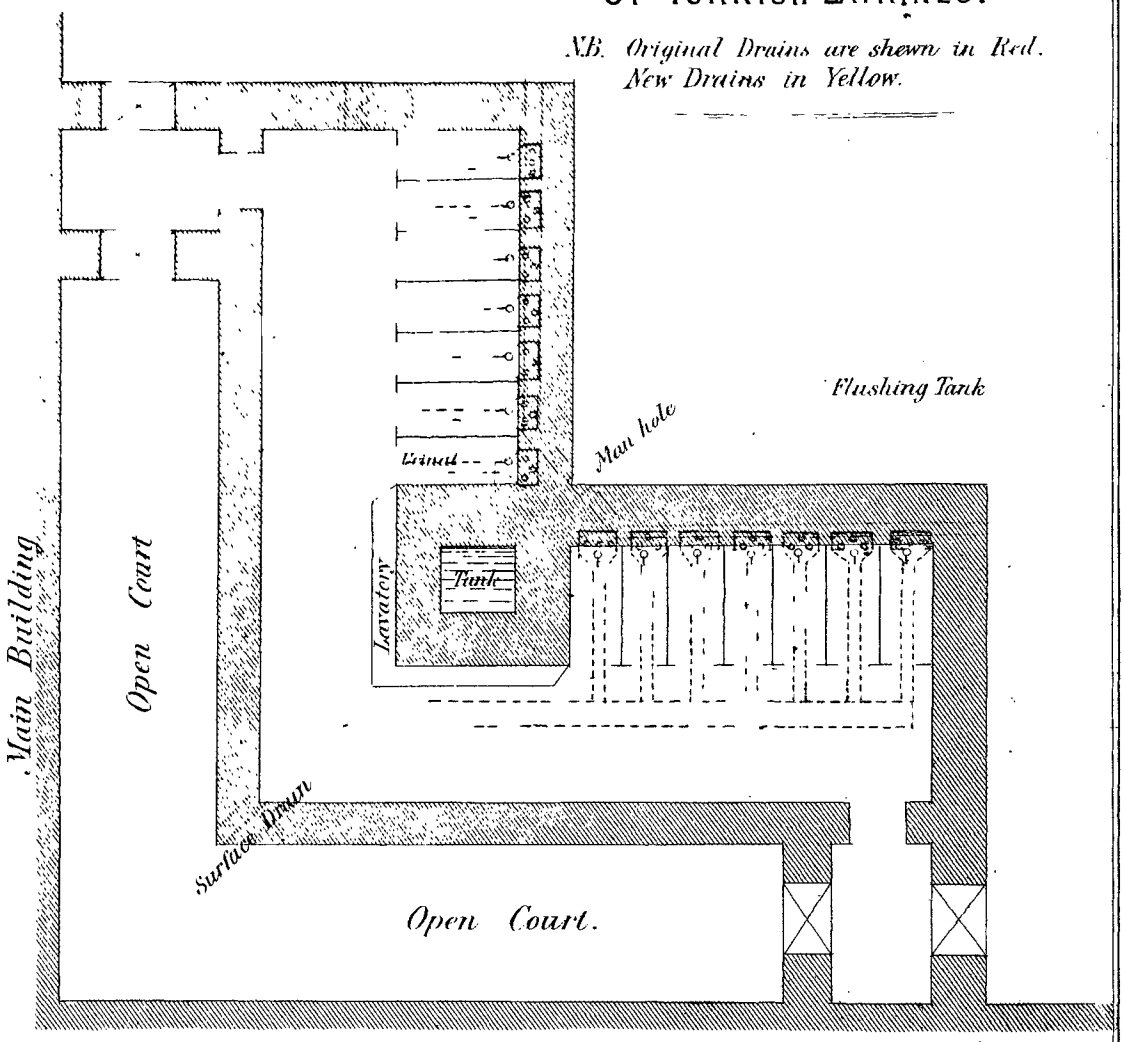
TEMPORARY FILTERING APPARATUS

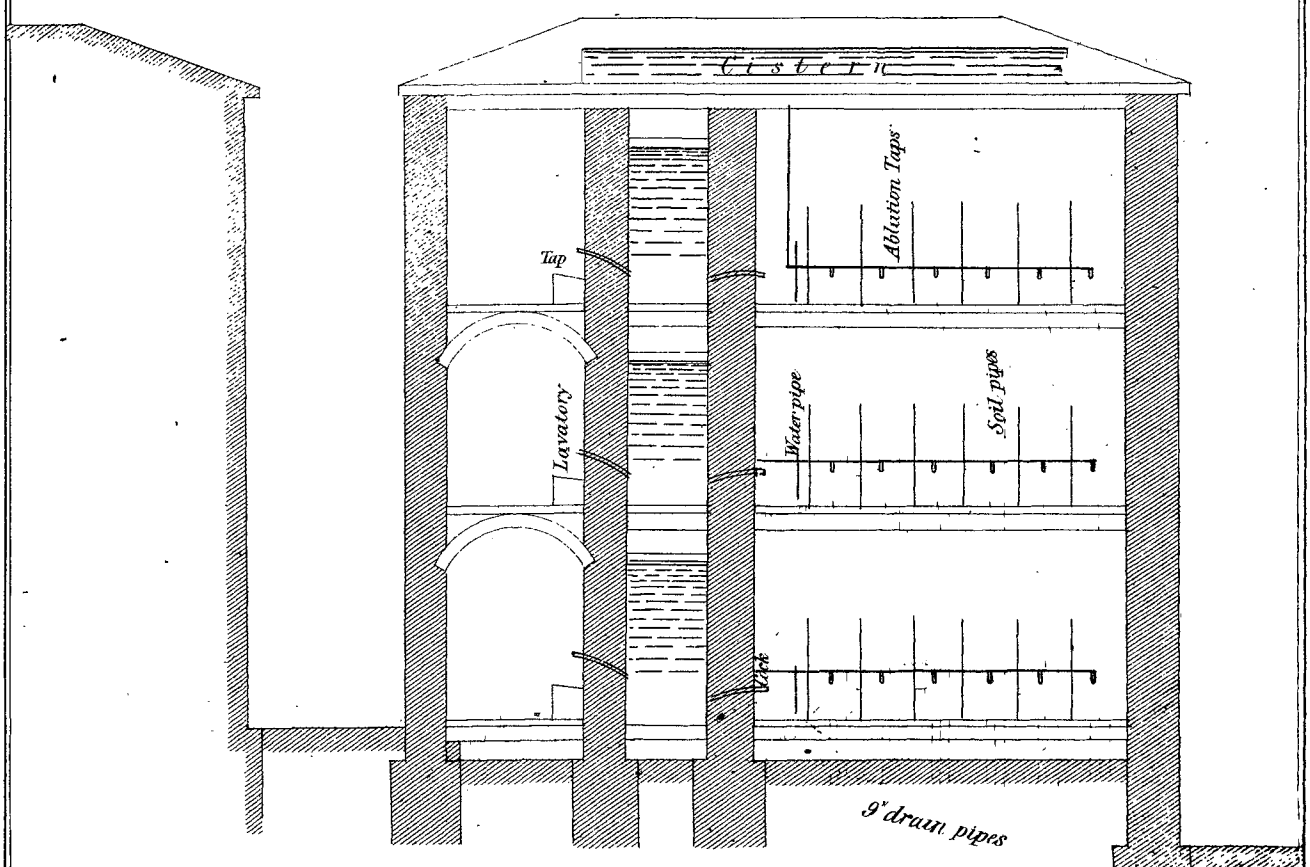


SKETCH V.

EXPLANATORY PLAN & SECTION OF TURKISH LATRINES.

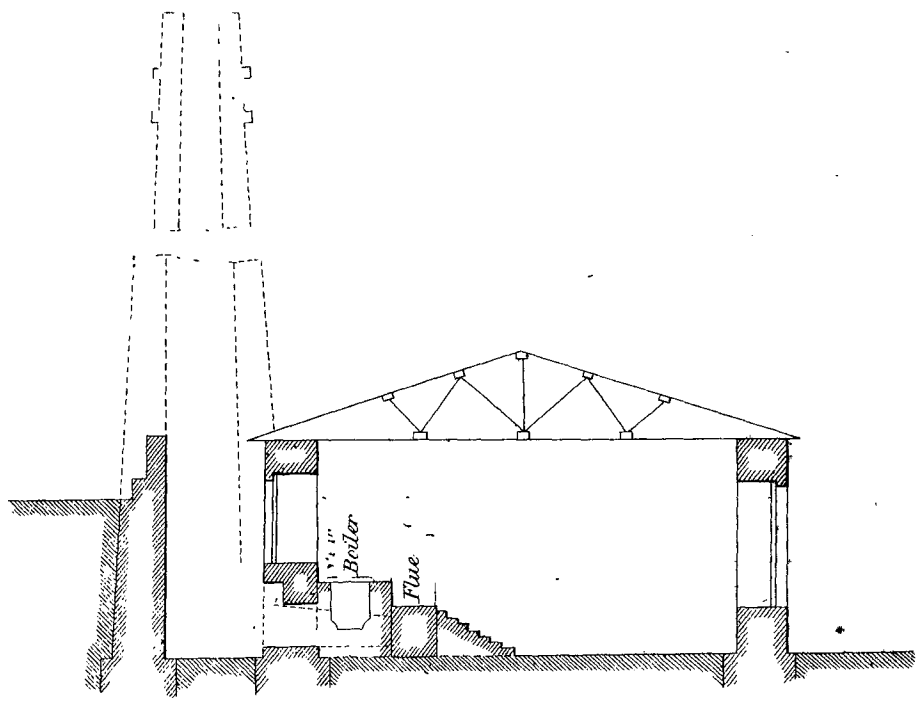
N.B. Original Drains are shewn in Red.
New Drains in Yellow.





Vincent Brooks Day & Son Lith

SKETCH VI.



EXPLANATORY SECTION OF COOK-HOUSE.

Vincen Brooks

No. 11.

Memorandum by the Army Sanitary Commission on Papers referring to proposed Statistics of Births, Marriages, and Deaths for India.

The Royal Commission on the Sanitary State of the Indian Army recommended "that a system "of registering deaths, and the causes of death, be established in the large cities of India, and be "gradually extended," &c.

In consequence of this recommendation the Army Sanitary Commission communicated with the Registrar General of England, with the view of obtaining the method adopted in this country for ascertaining and recording the facts. The information with which the Registrar General was kind enough to supply the Commission was embodied in Section VI. of our Suggestions for the Sanitary Improvement of Indian Stations, and included not only the method in use for registering deaths, but also the procedure for registering births and marriages.

The section concluded as follows:—"The method employed should be fixed by the Indian "Government," and although "the results in the first instance may be by no means satisfactory, "we should consider it of great importance that they should be obtained to the utmost practicable "extent, and in the best practicable way, in the expectation that in time this important branch "of the public service will become sufficient for all necessary purposes."

Since the date of the "Suggestions," the subject has been taken up in India, and for several years past mortuary returns have been sent to the Commission from different parts of India. These statistics did not appear to call for special remark, because it was evident that the work was only in progress, that it was necessarily beset with great difficulties, and that really reliable data would only be provided after a time.

The papers now referred to the Commission indicate a course of proceeding somewhat different from the one contemplated by the Army Sanitary Commission in their "Suggestions."

It has been proposed to deal with the whole subject of registration apparently from the point of view of its obvious difficulties, and to ask only for such information as there may be at the present time a fair prospect of obtaining, without reference to future improvement in the whole system of registration.

With this view it is proposed,—

1. That it would be premature to proceed with the registration of marriages.
2. That the introduction of a registry of births will not be insisted on immediately in any province where the local government or administration does not think that these occurrences will be reported with sufficient accuracy to make the collection of such statistics desirable.
3. That the registration is to be confined to deaths entered on forms appended, by local machinery applicable for the purpose.

The Commission would abstain entirely from any comment on the decision of the Supreme Government, but are desirous of putting on record certain considerations which, in their view, have weight as against the facts and arguments contained in the papers on which the Government has arrived at its decision.

1. In all countries the development of registration has been progressive. What statisticians have always aimed at has been to introduce a uniform system, capable, when in full operation, of affording the required facts, but, at the same time, with the knowledge that accuracy is a quality dependent on time, practice, and increasing care.

2. Statistical methods founded on this principle are in use in all, or nearly all, European countries, in the British colonies, and in North America. The results are published, and although not all of equal value, they nevertheless admit of comparison, and, with proper discrimination, can be used for many practical purposes.

3. India, under the proposed system of registration, will not supply results which are comparable with those of other countries, and the results, such as they are, will be confined only to death rates.

4. As the Commission consider that to do nothing at present with marriages and births is better than to adopt an imperfect system, because the facts cannot be obtained with all the accuracy desirable, the only question which arises for consideration is the period at which a registration of marriages and births should be commenced. This must be left to the Government of India, but it is most desirable that it should be undertaken with as little delay as possible, and that a uniform system of record should be adopted from the very commencement, however unsatisfactory the earlier results may be.

5. With reference to the proposals for registering deaths, the Commission desire to make the following remarks:—

(*a.*) So far as can be learned from the papers, the difficulties in India, in the way of ultimately establishing a sufficiently accurate system of registration, are apparently no greater than they have been in other countries.

If the registration of deaths is to be organized mainly to the obstacles in the way of obtaining accurate results, there seems no reason why a simple enumeration of deaths without reference to place, age, or cause of death should not be adopted, but this would be of no use for any practical purpose.

(*b.*) A step beyond this, but nothing more, is the plan adopted by the Government of India, and shown in Form A. in the proceedings.

This is called "A Daily Register of Deaths," but it is really not so. It is simply a rough,

probably inaccurate, daily enumeration and grouping of deaths and causes of deaths and ages. If it could be obtained it would be of little use for public health purposes ; it might, in the course of time, be improved in correctness, but this would probably be done at a cost far greater than its entire worth, for it would involve not only pecuniary outlay but apparently the permanent introduction of a very imperfect and probably useless statistical method, which would admit of little comparison with methods in use in other countries.

In short, if this method were the working Indian method, we should venture to suggest that it be replaced by a better one.

5. Taking into account all the difficulties stated in these papers, and bearing in mind of what great importance is a system of registration of deaths for the future sanitary improvement of India, we have again communicated with the Registrar General of England, with the view of ascertaining the real practical weight of the difficulties.

We append his views on the subject, and in these views we concur.

6. We would venture to suggest, that the whole subject of census and registration of births, marriages, and deaths in India be reconsidered from the following basis:—

(*a.*) That it is better, in the first instance, to adopt a system of record as far as possible in conformity with systems adopted in other countries.

(*b.*) That a list of fatal diseases and accidents in the native tongues, with their corresponding technical British names, be prepared for use.

(*c.*) That the cause of death be entered on the record, in conformity with the opinion of the registering official, after he has asked the necessary questions.

(*d.*) That a similar rule be adopted in ascertaining and entering the place, age, date of death, and other particulars.

(*e.*) That a weekly return of deaths, ages, and causes of death be prepared and published for large cities.

(*f.*) That a similar return be made up quarterly for country districts.

(*g.*) That means be adopted for communicating immediately to the local governments and to the Government of India the date and locality of fatal cases of cholera and its progress. Such information is of essential importance, not only to the public health generally, but to the health of the troops.

7. The appended copy of the Registrar General's letter, together with the publications* accompanying the letter, contain important points of experience, and will be useful in framing a scheme.

We also concur with the Registrar General in the opinion "that the mere asking of questions "about age, and about the cause of death, would be of itself an educational process, and would, "in the end, lead to reliable data being recorded."

Lastly. We are desirous of repeating that our remarks apply only to fundamental principles of registration, and that the agency by which the information is to be obtained and recorded can only be decided by the Government of India.

War Office, July 9th 1870.

General Register Office,
18th June 1870.

SIR,

IN compliance with your request, I return the extracts from the proceedings of the Government of India, Nos. 515/525, with the schedule annexed.

In reference to the inquiries in your letter of the 3d instant, I have already expressed opinions in favour of the extension of the census, and of the registration of marriages, births, deaths, and causes of death, to all the Colonies and the dependencies of the Empire.

In carrying out such measures the circumstances of each case have to be taken into account, but it appears to be desirable also to aim, as far as possible, at uniformity, and to keep in view the methods in use in England.

I am gratified to find from the enclosed papers that the Government of India have under their consideration a proposal to collect the "vital statistics of the general population throughout the British Empire in India on an uniform system."

The Army Sanitary Commission having requested my opinion on the points referred to in their letter, I can only speak with advantage to those following which involve general principles, as I feel that the details and machinery can be only organized in India.

I note a defect in the papers supplied. The records of facts are not sufficiently distinguished from the tabulated returns of numbers.

In England, speaking of deaths, a register records the name, sex, age, cause, place, and date of death, and this subserves many useful purposes. That record is the foundation of all the statistical abstracts. I hold that some register of that kind is essential.

From these registers the returns should be compiled and published for the large cities every week ; for the country at large every quarter of a year.

I enclose copies of my weekly and of my quarterly tables, to show the authorities a system which works satisfactorily here, and which I think should not be lost sight of in India, as the main features might be the same.

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* 1. Act for registering Births, Deaths, and Marriages in England, &c.
2. Regulations for Registrars and Deputy Registrars of Births and Deaths.
3. Regulations for the Duties of Superintendent Registrars.
4. Weekly Return of Births and Deaths in London, &c.
5. Quarterly Return of Marriages, Births, and Deaths in England.

Should deaths be registered under any age? I think this of the first importance. It will be best to enter the known or supposed age under a column headed "probable age," without reference to any other divisions of age than "months" for infants and "years" for all other cases. In *abstracting* the ages, some such division as those suggested having reference to the supposed age of puberty were formerly in use, but they have long since been abandoned for the decennial division in the best European statistics. The best divisions are found to be for the abstracts:—

Age.
0 and under 1 year.
1 year.
2 years.
3 „
4 „
5 and under 10 years.
10 „ 15 „
15 „ 20 „
20 „ 25 „
25 „ 35 „

and continued in decennial intervals.

In India these ages would not be exactly given for some time, but as the registration of births became general, the ages would be more accurately stated.

The ages in Ireland are not accurately known, but even in the most imperfect state such information is of use, provided it be used discreetly by competent and well qualified scientific men.

The same observations apply to the causes of death, respecting which the information would be at least equally imperfect. Small-pox, cholera, and a multitude of diseases are very well known; so are the injuries, the poisons, and the wild animals that cause death; these causes, when known, should be recorded. When the cause of death is "unknown," this will also be recorded. A list of all common fatal diseases should be prepared, with the corresponding native names. The causes of death should be classified on the English models.

I am of opinion that the mere asking of questions about age, and about the cause of death, would be itself an educational process, and would, in the end, lead to reliable data being recorded.

I attach very great importance to the proposal to introduce a system of uniform registration in India, and I shall be glad to hear of its having been successfully carried out. I have given an account in my Thirtieth Annual Report of what is done in the British Colonies, and I shall be glad to publish the results of the measures now proposed, so soon as they are in operation.

I am, &c.

J. J. Frederick, Esq.,
Secretary, Army Sanitary Commission,
War Office.

(Signed) George Graham,
Registrar General.

No. 12.

Minute of the Army Sanitary Commission on Papers referring to the Sanitary Condition of India.

1. Papers forwarded with despatch from the Government of India, dated 22d February, No. 6 of 1870, regarding the progress made in Sanitary Improvements and in Military Sanitation in India, and the proposed institution of Sanitary Agencies.
2. First Annual Report of the Sanitary Commissioner for Bengal, 1868.
3. Report on the Sanitary Administration of the Punjab, 1868.
4. First Annual Report of the Sanitary Commissioner of the North-Western Provinces, India, for 1868.

These papers have been separately referred to the Commission, but, as they belong essentially to the same subject, instead of reporting on them singly, it will perhaps be more advantageous to consider them together, with the view of avoiding repetition, and of deducing from them those practical conclusions to which they appear to lead.

The papers are of two classes:—

(*a.*) Administrative papers called forth in reply to Sir Stafford Northcote's despatch, showing what has hitherto been done in sanitary improvement generally, the difficulties which have been experienced, and the proposals made for forwarding the work.

(*b.*) Reports of Sanitary Commissioners giving the results of inquiries in their respective districts.

We propose in the present minute to state very briefly,—

1. The steps which have been taken to give effect to the recommendations of the Royal Commission on the Sanitary State of the Indian Army.
2. The present condition of the population, as shown by the inspectors' reports.
3. The difficulties in the way of dealing with the questions.
4. The practical steps which appear, on the whole, best adapted in the present state of the evidence to forward public health improvement.

Improvements already carried out.

First.—Several improvements of great importance have already been introduced by the Government of India. Chief among these must stand the appointment of Sanitary Commissions, which by their zeal and energy, have given a great impulse to the work all over the country. These Commissions, under different designations and changes, have collected and diffused a large amount of most important information on the sanitary state of troops, stations, civil population, towns, and villages, and by so doing have laid a basis for future improvements.

Second.—An excellent code of cantonment rules has been promulgated ; chiefly intended for cleansing purposes, for the prevention of nuisances, and for general regulation.

Third.—The principles embodied in our "Suggestions for the Sanitary Improvement of Indian Stations," although only applied to a limited extent as yet, appear to have met with general acceptance on the part of local governments and authorities. The new medical regulations issued by the late Lord Herbert when Secretary of State for War, and referred to in the "Suggestions," are in use in all British regiments, so far as these regulations are adapted for Indian purposes ; and direct and efficient means are provided whereby the duties of medical officers in advising sanitary measures can be fulfilled and the measures themselves carried into execution through the operation of the cantonment rules, or otherwise when required.

Fourth.—Many new barracks have been constructed, and many old ones have been improved ; and less objectionable methods of disposing of barrack sewage, than those formerly in use, have been extensively introduced.

Fifth.—Perhaps no portion of the administrative papers is of greater interest than those which give an account of the efforts made by magistrates and others to improve the sanitary condition of the people. To lay the foundation of this great work a Municipal Act was passed and is now in operation. Many of the municipalities have been stimulated to increased activity, and much useful work is being accomplished. The chief difficulties appear to arise from two wants:—

(*a.*) Deficiency of funds.
(*b.*) Want of properly qualified engineering officials.

The work done appears to have been cleansing chiefly, but except in Calcutta and Bombay little improvement has been carried out by permanent works. Part of Calcutta has been greatly improved by drainage and water supply, and by other works. Bombay has long had its public water supply, but there is, as yet, no complete system of drainage or sewerage. The cleansing operations have, however, been most energetic. In both cities the reduction of the death rate has been striking. Madras is also being improved, and has the honour of having first introduced sewage irrigation into India. The Madras Commission has had the greater honour of showing by a number of years' experience that pilgrims can be preserved from cholera by easily executed and inexpensive sanitary measures.

Sixth.—Great improvements have been effected in the sanitary condition of many gaols throughout India, and, thanks to the zeal and devotedness of medical and other officers and the support of the Government, there is now a fair prospect of the excessive mortality in many of these establishments becoming a matter of the past.

Seventh.—The accounts of village improvements show that many magistrates have spared no trouble in bringing the people to a proper understanding of the importance of these improvements to their health. In some districts much good has been done. Villages and dwellings have been more or less cleansed and improved, and in some instances with apparent decided improvement in the health and habits of the people. The more frequent obstacles to improvement are apathy on the part of the people, ignorance in the native doctors, long established filthy habits, the magnitude of the work requiring to be done in special instances, the want of sufficient funds, and perhaps above all the absence of interest in the subject on the part of zemindars and landed proprietors.

Making allowance for all deficiencies there is evidence that some progress has been made even in the villages. More appears to have been done in the towns. But as we shall presently show there are great public health problems in India waiting for solution. There are matters of the greatest importance in which scarcely a single step has been taken in the way of improvement.

Eighth.—Another great work going on in India is the examination of water sources. This was recommended by the Royal Commission on the Sanitary Condition of the Indian Army, and subsequently by the Army Sanitary Commission, at whose instance Dr. Angus Smith kindly proposed a scheme of analysis for estimating organic matter in water. The work in India has been hitherto mainly confined to the Bengal Presidency, where, under the able direction of Dr. Macnamara, a complete examination of wells, tanks, rivers, and springs is being carried out with results which cannot fail to be of the highest importance to the public health. A scheme of analysis applicable to the whole of India is now under consideration by Dr. Angus Smith and Dr. Macnamara, so that uniformity in the work will in this way be secured.

Ninth.—This brief statement will be sufficient to show that the sanitary improvement of Indian stations and of the country generally has made decided progress. But when we consider the magnitude of the problem to be dealt with, involving as it does great changes in many popular habits, besides the execution of works of various classes among a people five times the number of the entire population of the United Kingdom, it is no disparagement to say that little has yet been done in comparison with what is requisite to control the common disease causes of India.

The Commissioners' reports give a sketch of the sanitary state of the people over the whole of Northern India from Peshawur to the mouths of the Ganges. They show the diseases from which the people chiefly suffer, the approximate mortality from them, the state of drainage of the country and its influence on the production of malarial diseases, the state of water supply, sewerage, cleansing, house construction, domestic and social habits, and the like; and the general

result of these reports may be safely stated to be that, for all practical purposes, the causes which have rendered Northern India, especially its river deltas and plains, a hot-bed of malaria and of malarial diseases are for the most part known, and wait only intelligent and energetic action together with the necessary funds for their abatement and removal.

We shall next give a brief statement of the contents of these reports referring to the reports themselves for details.

Report on the Sanitary Administration of the Punjaub for 1868, by Dr. De Renzy Sanitary Commissioner.

Dr. De Renzy's report is an able practical exposure of the present sanitary condition of towns and stations in his district, including hill stations, together with the general principles to be kept in view in improving them.

The scope of the report is limited to 20 of these groups of population. He considers it inexpedient to deal with villages at present for reasons which he has stated, and he is of opinion that the progress of improvement would be better advanced by improving the towns in the first instance.

He discusses the causes of excessive death rates, especially by outbreaks of cholera, from the doctrine first broached in England of a cholera-water poison, which he believes in all likelihood to be the main cause of cholera, while he considers that the existing condition of water sources in India and the means in use for conveying water there, afford abundant opportunities for the transfer of the poison from sick to healthy people in the water supply.

It is not necessary to enter on this theoretical question, especially as Dr. De Renzy has brought forward an array of facts regarding the present sanitary state of the larger groups of population in his district, including the condition of the water supply, which renders further discussion of the causes of unhealthiness scarcely necessary, so far at least as theoretical agencies of this class are concerned.

The only reason why such a condition of matters as Dr. De Renzy describes should exist at the present time appears to be that hitherto the facts have either been unknown or their importance has not been estimated at its true value.

The following is a list of stations included in this report:—

Peshawur.	Umritsar.	Kohat.
Murree.	Umballa.	Dera Gazi Khan.
Simla.	Lahore.	Dera Ismail Khan.
Dalhousie.	Moultan.	Bannu.
Dhurmsalla.	Ferozepore.	Abbotabad.
Delhi.	Jullundur.	Jhelum.
Rawul Pindee.	Sealkote.	

It will be seen that this list includes the most important localities in the Punjaub and the principal hill stations to which people resort for preservation or recovery of health; and yet at scarcely one of these places is there a water supply which can be used for domestic purposes with safety.

The facts in regard to these waters are many of them of an extraordinary character. It scarcely excites surprise when the condition of water drawn from old native wells in foul ground is shown to be dangerous to health, for facts of this kind are familiar enough; but what can be said of methods of providing large communities, especially Europeans and European soldiers, with water, where the only thing which has been done has been to find a good water source and to leave everything else to haphazard.

Water supply consists essentially of two parts,—

(1.) A wholesome and sufficient source with means of protecting this source at all times from pollution.

(2.) Means of distribution which shall ensure that the pure water of the source is delivered without deterioration to the consumers.

Let us see to what extent these conditions are fulfilled at some of the most important stations in Dr. De Renzy's district.

Peshawur derives its water partly from the river Bara. There is no complaint about the source; but as soon as the water leaves this source it becomes liable to pollution. It is conveyed in open cuts to the station, exposed along their course to kinds of nuisance from the native population. The cuts become mere foul ditches, of which there are miles within cantonments, infecting both the air, earth, and water used by the troops.

Dr. De Renzy states that "wherever sickness at Peshawur prevails to any unusual extent, it will be traced to the use of water of small streams subject to the most revolting pollution." Contaminated water is largely used at the station, and is the principal cause of its unhealthiness.

In the month of September last upwards of 200 Europeans and 1,200 natives died at Peshawur of cholera. "The European troops have been decimated." He says what Peshawur wants *without delay* is a water supply free from "fœcal contamination."

All classes appear to suffer from this bad water. Prisoners in gaol have nothing else to drink, and Dr. De Renzy shows that the mortality mainly from bowel diseases among them had been 10½ per cent. during the 10 years, 1858 to 1867.

Few places have suffered more severely from cholera than Meean Meer. Whether all the causes of successive catastrophes at this station have yet been elucidated, there is, nevertheless, one probable cause known, namely, well pollution.

In the same subsoil of the station were dug wells and cesspits, two of these wells were 118 feet from cesspits which contained the accumulated filth of 11 years. The cesspits were 58 feet deep, and the filth in them was 35 feet deep.

In 1856 no less than 16½ per cent. of the troops died of cholera. During the next epidemic in 1861, 24½ per cent. died. The use of these cesspits was discontinued. They were emptied and filled up and surface latrines substituted. There was an epidemic of cholera in 1862, after this work had been done, and another in 1867; the death rate in each epidemic was 5 per cent.

In this instance we have an illustration of the effect of poisoned water in destroying British soldiers, but there was also the effect more or less of the most abominable odour from these cesspits poisoning the air in and around the barracks.

At the present time the methods described as in use for drawing and distributing water at Meean Meer, even if the source were unexceptionable, would make it a somewhat hazardous experiment to use the water in any quantity for drinking during an epidemic period.

Umritsar derives its water supply from shallow wells which appear to be little else than the subsoil drainage outlets of an area saturated with town sewage. The analyses of four wells, including the best in the place, are given, and of the best Dr. De Renzy properly remarks that it is obviously quite unfit for use. All the other sanitary arrangements of this city are most objectionable. Dr. De Renzy says truly, "It is no wonder that the inhabitants have been cruelly scourged with epidemics of cholera, fever, diarrhœa, and dysentery."

Murree is a sanitarium 7,000 feet above the level of the sea. It has notwithstanding been visited by two destructive epidemics of cholera in 10 years. Defective as are the sanitary arrangements of the station, it is stated to be by far the cleanest of the Punjaub sanitaria, so far as surface cleanliness is concerned. But the water supply is of the following kind. It is from springs in the ravines which, with one exception, are liable to admixture with surface drainage and to contamination in other ways. These springs are situated in fact in the watercourses which act as drains and sewers of the population: the chief water source is a tank formed in a ravine, and above the tank are several large houses. The water is at all times muddy and opalescent. Another tank is described as being situated in a watercourse which serves as the drain of many large houses, and not a hundred feet above this tank are several latrines, stables, cookhouses, &c., which discharge into the produce of the springs. This water was found to contain a large amount of nitrous acid.

The means of distribution are of the usual kind, and subject to the usual risks. Dr. De Renzy says, "The people can never be sure of the quality of the water they use," and "residents of "every class will be exposed to unusual risks in times when cholera may be epidemic in the "vicinity."

The case of Simla is worse than that of Murree although its elevation is from 6,500 to 8,000 feet above the sea.

Here, as at Murree, the water sources are in ravines which serve as surface drains and sewers, and the water is daily, even hourly, liable to disgusting pollution. One source is described where the water bubbles out of the rock over an area of eight square feet, and there was about it fœcal matter, bones, old shoes, &c., the refuse and filth of the club overlooking it. "The fœcal "matter and compost were being gradually worn away by the current and carried into the reser- "voir for distribution to the residents in their drinking and cooking water;"—which water is distributed in the usual way by water skins.

Other water channels are described as polluted throughout with fœcal matter.*

The present condition of the water supply in these Punjaub stations constitutes, as Dr. De Renzy shows, only one of the elements of the high sick and death rates to which they are subject. The reporter enters with sufficient fullness into the questions of paving, cleansing, and drainage to show that everything has yet to be done in improvements of this class. Generally he shows that the true solution of the difficulties lies in providing a sufficient water supply, in sewering the cities, draining the houses, and applying the sewage to agriculture, which he considers the best manner of using it in the Punjaub.

He states, however, that there is difficulty in the way of obtaining skilled engineers to plan and execute the necessary works, and that "men qualified to undertake the works that are re- "quired for the sanitary improvement of towns are absolutely unprocurable in any considerable "number."

This excellent report shows that town sanitary improvements in the climate of the Punjaub resemble very closely indeed those required in England, and that there are no greater difficulties in dealing with the questions in the Punjaub cities than have been met successfully in English towns of all classes.

First annual report of the Sanitary Commissioner of the North-West Provinces.

Mr. Planck's report gives a brief sketch of the sanitary condition of the following 58 towns inspected by him in the North-West Provinces during the year 1868, as well as of part of the country population:—

1. Allahabad.
2. Moozuffernuggur.
3. Mirzapore.
4. Ghazeepore.
5. Jounpore.
6. Benares.
7. Agra.
8. Meerut.
9. Gurhmuktesur.
10. Allygurh.
11. Bareilly. } Bareilly District.
12. Beheree. }
13. Aoonlah. }
14. Pilibheet. }
15. Furreedpore. }
16. Beesulpore. }
17. Shahjehanpore. } Shahjehanpore District.
18. Tilhur. }
19. Jellalabad. }
20. Powaine. }
21. Meranpore Kutra. }

* It is unnecessary to pursue this subject further, but it may be useful to state by way of contrast the steps taken in Asia Minor for supplying water to British hospitals during the Crimean war in order to secure the two conditions of a pure water supply mentioned above. It was necessary to bring water for Renkioi hospital from a distance of three miles, and for this purpose to find a sufficient number of springs. The water was pure, and according to the method described by Dr. De Renzy as being in use at Indian hill sanitaria it would have been sufficient to have cleared out the springs and made open cuts for conveying the water and for carrying it in skins to the patients, and then leaving everything to itself. At Renkioi, on the contrary, the springs were cleared out and covered; trenches were dug in the rock and soil from each spring to a common channel; red earthenware drain tiles of country make were laid in the trenches, bedded in concrete, to an earthen pipe main which ended in a masonry tank, and, from the tank, water was laid on for use to each ward by pipes. The supply for the great hospitals at Scutari was augmented by native workpeople on the same principles. The works were simple, inexpensive, and efficient.

22. Budaon.	Budaon District.	42. Chandpore.	Bijnour District.
23. Sheikoopore.		43. Bijnour.	
24. Kukrala.		44. Mundawur.	
25. Alapore.		45. Keeruthpore.	
26. Oojhanee.		46. Nujeebabad.	
27. Bilsee.		47. Nugeenah.	
28. Suheswan.		48. Nehtour.	
29. Gonoor.		49. Dhampore.	
		50. Ufzulgurh.	
		51. Shercote.	
		52. Seohara.	
30. Chundowsee.	Moradabad District.	53. Sehespore.	
31. Nerowlee.			
32. Sumbhul.			
33. Sirsee.			
34. Moradabad.			
35. Mogulpore.		54. Bazpore.	Terrai Pergunnahs.
36. Umrohah.		55. Gudderpore.	
37. Hosseinpore.		56. Budderpore.	
38. Buchraon.			
39. Dhunouree.			
40. Kaant.		57. Furruckbad.	
41. Kasheepore.		58. Cawnpore.	

The facts in regard to these towns are of the same general nature as those supplied by Dr. De Renzy, except that Mr. Planck dwells less on the state of the water supply, and devotes his attention more to the general sanitary aspect of the localities visited. At two or three places, particularly at Cawnpore, much has been done by cleansing and surface work to improve the public health, but generally, so far as can be learned from the reports, no consistent scheme of improvement, including the great elements of water supply and drainage, appears as yet to have been entertained.

It is satisfactory to know, however, that cleansing is being better organised and carried out, and especially at Cawnpore, where the town manure is used with advantage on a municipal farm, instead of being buried as at other places to the imminent danger of poisoning the subsoil and well water.

The sanitary condition of these provinces cannot be considered as satisfactory so long as fevers of various types proceeding from animal as well as from vegetable emanations are the most frequent causes of mortality, except when cholera intervenes.

With some surface cleaning carried out there are, still existing as causes of miasmatic diseases all over these provinces, swampy undrained districts, imperfect irrigation, filthy ditches along roads and near houses, cesspits for household filth, filthy native habits, no drainage, foul water passing into the subsoil even where the household filth is removed under the "dry earth system," broken ground and hollows in which filth is deposited, unhealthy house accommodation, and there can be no doubt also contaminated water in many cities and villages.

First annual report of the Sanitary Commissioner for Bengal.

Dr. Smith's report contains a very interesting abstract of replies to questions issued by him to 40 medical officers, doing civil duty at an equal number of districts and stations in Lower Bengal, including a number of places situated on the deltas of the Ganges, Brahmapootra, and Mahanuddy.

The following is a list of the districts reported on:—

Central.	*Northern.*	
1. Bhowanipore.	13. Kooshtea.	28. Peerulia.
2. Howrah.	14. Pubna.	29. Chyebassa.
3. Hooghly.	15. Rampore Beauleah.	30. Hazareebaugh.
4. Jessore.	16. Maldah.	
5. Kishnaghur.	17. Rungpore.	*North-Western.*
6. Berhampore.	18. Julpigaree.	31. Bhaugulpore.
7. Furreedpore.	19. Darjeeling.	32. Monghyr.
8. Burrisaul.	20. Purneah.	33. Gya.
		34. Patna.
	Western.	35. Mozufferpore (Tirhoot).
	21. Burdwan.	36. Chumparun (Moteeharee).
Eastern and South-Eastern.	22. Cutwa.	
9. Dacca.	23. Bancoorah.	*South-Western.*
10. Mymensing.	24. Raneegunge.	37. Midnapore.
11. Tipperah.	25. Soory (Beerbhoom).	38. Balasore.
12. Noacolly.	26. Rajmehal.	39. Cuttack.
	27. Deoghur.	40. Pooree.

The replies are given in the form of reports edited and condensed by Dr. Smith as far as practicable, so that any further abstract of them would be difficult of accomplishment.

The Commission are desirous therefore of limiting their remarks on the reports to the leading practical principles deducible from them.

1. In the first place Dr. Smith has brought together under one view a sanitary sketch of the principal points in this vast region, which for interest and information far surpasses any previous reports about Bengal. Considering that the civil medical officers who have contributed the information are engaged in the active duties of their profession, it is gratifying to find that they have been able to render such essential service to the public health cause as they have done in preparing

these reports. There is a remarkable concurrence of views on all essential points throughout them; the authors have shown themselves quite able to deal with questions affecting the health of the people among whom they live, and there can be little doubt that if means were provided for giving effect to the measures indicated by them with more or less detail, great benefit would follow.

2. There is also a melancholy sameness throughout the reports. They bring before us a vast population, inhabiting an area as large as a European kingdom suffering year after year from violent epidemics. The same words occur in describing them:—Cholera, fever, dysentery, diarrhœa, skin diseases, small-pox. Cholera not always the most mortal disease.

The causes may all be included in a few words. Malaria, filth everywhere, dead animals and offal lying about, foul water to drink, overcrowded wretched hovels, instead of houses to live in, fouling the ground by filthy personal habits, indifferent food, degrading vices, including spirit drinking, uneducated medical assistance.

3. The causes connected with locality exist in most intensity in the river deltas. These causes are,—irregular distribution of water channels; inundations of great tracts of country from the rise and overflow of rivers; variations in the course of rivers; absence of systematic control over the waters; great rainfall, without drainage works for carrying it off; large tracts flooded at one period of the year and left to dry up slowly during other periods; shallow lakes and ponds, marshes, and marshy, wet, water-logged subsoil; superabundant vegetation and jungle springing up rapidly in all directions, interfering with ventilation, fostering a damp malarious condition of the atmosphere, and enclosing many villages. Added to all this, there is a tropical temperature.

The case, in fact, is one of a vast area of what ought to be as rich a country as exists on the face of the earth, left almost entirely under the operation of natural forces, its riches still imperfectly developed, and its great advantages hence converted not only into causes of excessive disease and death-rates to the native population scattered over its surface, but to people living far beyond its boundaries.

4. Under such conditions the population fails to appreciate the benefit which might accrue from improvements in their own dwellings and habits.

Their houses are little better than hovels, often greatly overcrowded. Their only domestic convenience, when they have any, is a cesspit dug in the soil of the delta, close to the household well, into which in many cases the cesspit drains itself, or it is the nearest vacant piece of ground, or the road-side, or the ruins of the nearest hovel. The water supply, whether obtained from house-wells or tanks, appears to be very foul, and quite unfit for domestic consumption. There appear to be few or no arrangements for domestic cleanliness, filth and refuse matters are retained in the houses or thrown into the road. The people themselves are poor, apathetic, underfed, sickly, indisposed for much exertion, filthy in their clothing and habits; their clothing scarcely sufficient to guard against alternations of temperature. The landed proprietors appear to take little interest in their health; the people are decimated year after year by epidemics, or rather by endemics, of fever, cholera, and other diseases of miasmatic origin; or their usefulness to the State is diminished or destroyed by the permanent consequences of these diseases. Their only resource under these inflictions appears to be temporarily running away from the villages, and when matters become too bad for endurance, they leave the village altogether and build another on new ground, with immediate benefit to health. It is a striking proof of the influence of careless occupation of a locality in deteriorating its sanitary condition, even in districts eminently unhealthy, that the population decreases in old villages and increases in new villages. After a time, in new villages, the old course is resumed, disease and mortality increase, other changes of habitation are sought, and this appears to have been going on from generation to generation.

5. The details required to fill up this brief sketch will be found in the reports, and there are few sanitary records containing more painful facts or on so large a scale. Not the least interesting portions are those supplied by educated native Indian physicians, whose enlightened appreciation of the real nature of the facts is one of the most hopeful signs for the future sanitary improvement of India.

6. The local and personal causes against which the civil surgeons have to contend in dealing with epidemics are evidently sufficiently intense to occupy their powers of observation, and the paramount importance of dealing with these causes is recognised. Quarantine as a means of arresting cholera finds little countenance from men under whose observation the disease is daily manifesting itself anew.

7. So far as questions of health are connected with the periodically flooded delta lands, they indicate the need of reclamation of land, and every work required for this purpose. Land and river engineering on a large scale would improve this great province, would make it habitable by human beings, and would convert what has been to all appearance a plague spot to India, and to countries far from India, into a source of wealth and utility to the whole British empire. The main obstacle in the way of such a work is its magnitude, but nevertheless a commencement might be made in dealing with it.

8. The reports further show that whatever evils to the health of the people may arise from the present state of the country, these evils must be greatly aggravated by the state of the houses and villages. The simple fact that new sites are selected for villages when the old sites are no longer habitable is sufficient to prove that even in a naturally unhealthy region there are preventible causes of aggravated unhealthiness.

Dr. Smith's report gives these causes with sufficient detail for practical purposes, and he also gives a code of conservancy rules for villages.

Rules of this kind can only be drawn up by those thoroughly conversant with local circumstances and native habits, and may possibly be subject to some variations in different districts. We shall only select the points from the reports which appear to be of most general importance. The rules should be as few and simple as possible.

9. To all appearance the easiest and least expensive way of dealing with many villages would

be to desert them at once. They are mostly mere mud hovels, with holes for various purposes in and about them, and represent very little capital. While to retain and improve them must necessarily involve a very considerable outlay both in money and labour, with the possibility that no adequate result would be realised.

Sanitary requirements for villages.

So far as regards villages of the worst description; the question therefore relates to the sanitary points which ought to be observed in reconstructing them on new or better sites.

The same principles, so far as they admit of being applied in any given case, might be adopted with advantage in dealing with the better class of existing villages.

(1.) The highest level site should be selected, as is generally done at present.

(2.) Streets should be laid out at right angles, and a sufficiency of open space preserved within the village precincts.

(3.) As a rule wells should be sunk outside houses, and compounds in the centre of open spaces within the village at a distance from houses and from drains, or they should be beyond the outskirts.

Rules are required for ensuring that the ground for some distance round the tube of the well is kept clean and free of nuisance, and that the surface is properly drained *away* from the well.

Wells should be dug to a sufficient depth to obtain enough of good water. The tube should be built and raised two or three feet above the ground. The immediate subsoil water should be cut off from the well by concrete or puddle, or both. Every well should have a cover, and water should be raised either by pump or by iron chain, bucket, and windlass.

A good well of this kind in a safe and convenient position ought to be sufficient for a considerable number of houses, and house wells should be abolished. The facts in the reports are sufficient to show that house wells in such villages can never be safe.

In some localities the best source of water supply for domestic use would be tanks. But the reports show that tanks are about as liable to pollution as house wells. The only way to avoid this contingency is to dig the tank in clean ground in a locality where it would be safe from mere accidental pollution, and to restrict its use rigidly to domestic purposes.

Separate tank provision should be made at a safe distance from villages for bathing and for washing and watering cattle, and tanks of this class should be placed under proper regulation.

(4.) It should be a rule that building material for houses should be brought from a distance. None should be excavated within or near the outskirts of any villages. The distance should be fixed by the sanitary authority. All excavations in existing villages should be filled up.

(5.) Improvements in house construction can only be secured by co-operation with the people and explaining their reasons.

(6.) Clearing away jungle, draining, tree planting, tilling, and cropping the outskirts of villages are all necessary parts of sanitary improvement.

(7.) Daily removal to a distance of the solid and fluid excreta of the population is a matter of imperative necessity.

Movable vessels on the dry earth system may be adopted.

There must be no cesspits, and no such a thing as throwing household filth on the ground of houses or compounds or into the roads, in the way described in these reports.

If common privies or latrines are used outside the houses, the same rule should be applied; there should be movable vessels, with or without the dry earth system, to be taken away daily.

The excreta should be daily disposed of for agricultural purposes. They should not be buried in a hole.

Refuse of food and house dust should be removed daily, and dead animals buried.

(8.) Water which has been used for washing, cooking, bathing, &c., should either be carried away and emptied at a distance, or there should be shallow, smooth, surface drains formed of some impervious material laid in the village streets, and sloped so as to carry drainage water rapidly away from the village, and to keep it out of the subsoil.

In any cases where household drainage is practicable all the fluid refuse could be most satisfactorily disposed of by underground drains, and applied by irrigation for agricultural use.

(9.) In new villages provision should be made for keeping cattle and other animals at the outskirts of the village.

(10.) Noxious trades of all kinds, slaughtering, tanning, and the like, should be carried on at a safe distance from the population.

(11.) When sufficient conveniences have been provided, there should be a prohibition against fouling the ground around villages. If for any reason the practice of resorting to the fields for natural purposes must be continued, then this should be regulated so that all excrementitious matters may be covered at once, and the ground cropped from time to time.

(12.) Some of these principles no doubt would be applicable in improving existing villages. Ruinous hovels might be removed and the ground levelled; roads and lanes might be widened and straightened; new lines of street might be laid down; more healthy principles of health construction might be proposed to the people for adoption in new houses; new wells or tanks might be dug or old ones cleansed and repaired for use or filled up. Excavations in and about villages might be drained, filled up, and levelled, and the practice of digging holes might be prevented in future. Village roads might be improved and surface drained, and general police regulations such as those stated above introduced. Above all things every village and compound might be cleansed and dry earth used to cover foul ground.

If these able reports on Lower Bengal are to lead to any practical result the points we have indicated above are those which would involve the smallest interference with existing houses and villages at all fit for habitation, and it would be no easy task to show that any of them are unnecessary, or might be dispensed with.

One other subject mentioned in the reports requires notice, namely, the want of knowledge of disease and its treatment among the lower and uneducated class of Indian medical attendants.

Very few natives, in comparison with the requirements of the country, have as yet received a medical education; and it is very probable, indeed, that some of the existing high mortality in India is due to this circumstance.

There is an excellent minute on this subject by the Governor of Madras, in which he proposes to extend the benefits of provincial dispensaries by converting them into primary schools of medicine and surgery for the benefit of the native population.

Having given very generally the leading points in the inspection reports we shall next proceed to consider the difficulties in the way of removing the chief disease causes which are pointed out in them. These difficulties are indicated partly in the administrative, and partly in the inspection and other reports, which have been before the Commission.

Great extent of work to be done.

The first difficulty springs from the mere extent of the work.

India is covered with great cities, in none of which (if we partially except Calcutta and Bombay) has any consistent scheme of improvement embracing all the requirements for public health been carried into effect. Nearly the whole city work has to be done.

But great as this branch of work is it falls short of the work required for villages. Dr. Townsend has shown in his report on cholera that the epidemic of 1869 covered a population in the Central Provinces of 7,969,801 and that this (for India) comparatively small population occupied no fewer than 30,135 towns and villages, of which it may be safely said that every one requires sanitary improvement.

The cities ought to be improved by the municipalities. But it appears that not many of these bodies have as yet become awakened to a sense of their responsibilities. In many instances the municipality appears to pass over its duty to the chairman. Again, funds for sanitary purposes are generally deficient. None of the reports give any hint of engineering examinations with the view of preparing schemes either for improved water supply or drainage (Calcutta, Bombay, and Madras excepted). The chief measure attended to with more or less effect is cleansing, a most indispensable duty, but a very small part of what is required for protecting the public health of cities. Except in the three capitals there is no indication in the reports of the presence of the sanitary engineer in any city. And we are sorry to say that there are examples in the reports of so-called engineering sanitary works which had better never have been executed.

It is gratifying to know, however, that by the application of the very limited means at command there are instances of marked improvement of the public health.

The village difficulties appear to proceed chiefly from the fact that it is nobody's business to attend to sanitary duty on the spot, and that the work is far too great to be done at the cost of the Government.

The people, as a body, know nothing at all about health questions. Filth is removed under the pressure of necessity mainly; water of any kind that comes easiest to hand is preferred for culinary purposes. The sanitary state of many villages depends to a great degree on the state of the district in which they are placed. A malaria-breeding country incapacitates its inhabitants for much work, either of mind or body; and the practical consequence is that things are taken as they are and left as they are, until some village elder suggests that the best thing to be done to save the people from cholera or other epidemic which is decimating them or destroying their cattle is to go away altogether.

The reports appear to show that something is due to race. Some village tribes are more backward in intelligence and less appreciative of questions of this kind than are others. The general obstacle is described to be the *vis inertia* of the people.

In most cases where instructions or rules have been issued and left to the action of the people themselves, nothing has been done; but there are instances in which improvement has been welcomed and copied.

There are various suggestions regarding villages made in the papers which are worthy of consideration for practical purposes.

Interesting the higher classes of natives in the question, with the view of bringing their influence to bear on the people, is one of these suggestions.

It is stated that fining the zemindars for the bad state of villages had done good. They do not appear to have paid much attention to mere instructions to keep their villages clean.

It is stated again, that the right course of proceeding is perpetual visitation and persuasion by the health officer.

A modification of this proposal is made by Dr. Townsend, who advocates the appointment of competent native inspectors to supervise village districts, to report annually on the condition of villages, and to act under European sanitary superintendence.

There is undoubted evidence that much good has in many instances been accomplished by the persevering self-denying exertions, both of magistrates and health inspectors.

In some instances conservancy rules have been introduced with advantage into the settlement papers.

In order to meet peculiar local usages about manure, it is proposed in two or three reports to exempt from assessment an area of ground near villages for the purpose of storing manure away from houses.

A most important suggestion made in certain of the papers is the establishment of model villages as examples to the people of the district.

And another of almost equal importance is the introduction of sanitary instruction into public schools, as a branch of the school work.

But in dealing with any or all of these proposals, it must be borne in mind, as already stated, that the health of many villages is practically controlled by causes altogether beyond the power of the people to deal with. This work can be done only by Government. In such districts sanitary improvement consists of two portions essentially distinct, but depending on each other; these are improvement of the country and improvement of towns, villages, and houses, and each must be executed by its own agents.

Conclusions.

The evidence in the papers before the Commission appears to lead to the following practical conclusions:—

1. That there is nothing special in the sanitary problems presented either in towns, villages, or country districts in India, with this important exception that sanitary works and measures are of far more pressing necessity in India than they would be in colder climates.

2. All the experience gained of late years shows that merely local efforts at improving health of troops and people without taking into account the general malaria-producing causes incidental to the climate and country will prove insufficient for the objects in view.

3. That immediate steps should be taken to have a survey made of the Ganges delta with the object of devising means of regulating the water, draining wet and marshy ground, and improving the culture of the country.

4. That marshy malaria-producing tracts of country in other districts of India should be examined with the ultimate view to their being drained, and the culture improved.

5. Sanitary works for Indian cities are of essentially the same character as those required in England.

No permanent improvement can be expected in any city without combined works of water supply and drainage, which form the foundation of city improvements everywhere.

On this point we beg again to refer to the principles already laid down in our "Suggestions for the Sanitary Improvement of Indian Stations."

The present unsatisfactory condition of certain so-called "drains" in some places, described in these papers, is due to the apparent absence of knowledge of the true principles on which sanitary works should be executed.

6. We concur in the opinion of Dr. De Renzy that application of town sewage to agriculture would be practicable as well as profitable in India. Judged by the Madras experiment the money value of farm produce raised by sewage irrigation in India would be greater than in England.

7. The papers show anew the necessity for providing municipalities not only with funds but with engineers practically conversant with the most efficient and economical methods of planning and executing sanitary works. Dr. De Renzy states that talent of this class is not available at present, while the papers show that want of municipal funds is an obstacle to improvement.

8. The facts in regard to villages appear to show that frequent careful inspections made by sanitary inspectors or their subordinates, an occasional visit of a district sanitary engineer, together with the personal influence of magistrates, and a few simple rules for guidance, would in all probability exercise a most beneficial influence on the sanitary improvement of village populations.

The main removable causes of ill-health in villages are bad water and filth.

New wells, better regulated tanks, filling up holes, keeping village roads and surface drains in repair, cleansing and prevention of nuisances, for all of which the requisite labour might be obtained in the villages, would remove the principal causes of ill-health in these small groups of population. But there are many villages, apparently, which it would be better to remove and reconstruct.

9. Nothing would give a greater impulse to village improvements than the erection of model villages and sanitary instruction in public schools.

10. The reports show that civil surgeons are capable of doing efficient sanitary inspecting work; that it would be advisable to employ these gentlemen, both British and native, as district inspectors; and to strengthen the public health service as proposed by the Governor of Madras by extending the benefits of medical education still further among natives.

Lastly, while indicating very generally the nature of improvements required, so far as these can be arrived at from the reports, the Commission is desirous of repeating what has been already stated as to the extent and importance of the works already done by the Government of India for benefiting the public health.

J. Hope Grant, Q.M.G., and President.
Douglas Galton.
John Sutherland.
H. H. Massy.
T. A. L. Murray.
W. E. Baker.
J. R. Martin.
Robert Rawlinson.

J. J. Frederick, Secretary,
Army Sanitary Commission, War Office,
August 5th, 1870.

No. 13.

Letter from Florence Nightingale to the Bengal Social Science Association (referred to at page 46 of Report).

The following paper was addressed by Miss Nightingale to the Bengal Social Science Association, inclosed in a letter acknowledging the intimation of her election as an honorary member of the Association:—

London, June 1870.

The best proof of my feeling of gratitude for the honour which you, the Bengal Social Science Association, have offered me of membership is to show myself a member in spirit, however unworthy, and to send a few remarks, however imperfect, with reference to the health and habits of the great populations inhabiting India, which you know and understand so much better than I do. Yet still I shall succeed, if in nothing else, in showing the great interest now felt by public opinion in England in the health, both physical and social, of those to whom we truly feel as to our beloved brother and sister subjects in India.

Since our Queen first directed an inquiry to be made into the health of her people in India, very much has been done by the Government to give effect to the recommendations of the Royal Commission which conducted that inquiry.

But the work increases in importance year by year.

I have the privilege of hearing frequently of the proceedings in India; and while on the one side no one subject has more attention than this branch of the social condition of the Indian peasantry and dwellers in towns, on the other, no one subject seems to loom greater and greater still and more immeasurable and important as you approach it, like your own great Himalayas as you come nearer to them.

There is so constant a relation between the health of a people and their social civilization that, alas! one of the best, if not the best indication of the social state of populations is afforded by the numbers who die year by year.

Nor this only; but the Almighty has so linked together the happiness or misery of all His creatures, that we in Europe can almost anticipate whether Indian cholera is to devastate the nations of the West by the number of people who are dying of it in Lower Bengal.

If we are not linked together in love and mutual help, as we ought to be, of our own free will, we shall be linked together by mutual injury, the injury inflicted by mutual ignorance and prejudice. And this by the laws of the Eternal Perfect One, who thus leads His children in the east and in the west to know and follow after the right.

To come to the practical. It is scarcely too much to say that the future advance of Indian social civilization, and the question of cholera or no cholera, are little else than one and the same thing.

For if you in India ever succeed in eradicating this scourge, the whole tone of Indian domestic and social habits will be raised in the process.

But if this scourge be left to follow its own course the social condition of the people, it needs no prophet to tell us, must inevitably decline.

Cholera, it is true, is not our only scourge. But where cholera disappears, diminished by sanitary measures, there is no fear but that fever, diarrhœa, dysentery, and the like, will disappear faster than cholera itself.

Here several questions arise to us:—

What can the people do individually to prevent cholera?

Have they any power to do so?

What are they to do? or can Government alone do the work for them?

The work is twofold, as we all know. Part of it is so great that it is quite beyond the power of private individuals to do it. But another part of it is so great that no Government can do it, and it can only be done by the people acting for their own safety.

Take Calcutta:—

The Municipal authorities are draining Calcutta and supplying it with water-works beyond the power of private individuals. But the authorities can never by any process ensure that the people shall attend to the minute cleanliness of their houses, clothes, persons, and habits—which is just as essential a sanitary business, believe me, as any engineering works, however costly.

All that a municipal government can do by engineering works is, in most cases, to give the people the greatest possible facilities for keeping their dwellings, habits, and persons pure and clean, and for obtaining wholesome water. Everything else must depend on their own exertions.

Take another instance:—

In a most important report* on cholera, we have been shown that in all probability this pestilence is a product of the wet drying-up subsoil of Lower Bengal—that the whole country, including the deltas of the Mahanuddy, the Hoogly, and the Brahmapootra, is the perennial home of cholera—and that this is mainly due to neglected subsoil and unused riches.

Here then is a noble field for Government to work in. To drain, to regulate the rivers, to encourage better agriculture, and to introduce improved implements, would be to add another province to India, and to do a great work in eradicating India's opprobrium.

But, although these advantages could not be obtained without public works, advantages of equal importance would still have to be won by the people themselves. The cultivators of a country are its real health improvers.

There is work enough and to spare for both Government and people in this enormous field of usefulness.

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* Dr. Bryden's Report on Epidemic Cholera in Bengal.

While those, therefore, who, like you, are leading this movement, should help in forming public opinion as to introducing arterial drainage works in malaria districts, in spreading over India improved agricultural methods and better agricultural implements—in forwarding municipal improvements of drainage, water-supply, cleansing, &c., in cities and towns—there is still a greater work to be done in training the tens of millions of India in improved domestic and social habits.

Silver and gold and stone and brick and steam and cotton are easy to work with in comparison. But men's hearts and minds, their ignorance and their cleverness, their prejudices and their enthusiasms are not easy to work with, and require a far higher order of genius in those who have to deal with them.

So much the more honour to those whose wisdom and devotion are such that they may be called the leaders of mankind. For, ah! mankind often abuses the permission to be a fool.

And as we find in all history and true fable that the meanest causes universally multiplied produce the greatest effects, let us not think it other than a fitting sacrifice to the Eternal and Perfect One to look into the lowest habits of great peoples, in order, if we may, to awaken them to a sense of the injury they are doing themselves, and the good they might do themselves.

For instance:—

Is it not true that in many houses the accumulated filth of the whole household is scarcely ever removed?

Is it not true that in or near to many houses there are private tanks used for all purposes, washing, bathing, and such like, and the water used afterwards for drinking or cooking?

Is it not true that there are religious ideas prevailing among certain people which favour the drinking of foul water?

[And would not the pure religion of the One Perfect rather lead the other way?]

Is it not true that in many private houses the privy and the well are close to each other?

Is it not true that the blood and offal of slaughtered animals are left within the dwelling places of those who slaughter them or are left to fester and generate disease round places of sacrifice?

Is it not true that many houses of the poorer class are so crowded at night that the air is poisonous?

Is it not true that surface drains intended to carry off the rain are made places of deposit for every kind of filth?

Of course every one of you, gentlemen, could multiply and multiply these instances, being so far better informed than I am. I myself could suggest many more. Perhaps I have not even suggested those which are the most destructive to health. I have given them merely as instances where Government can do little or nothing, where the people can do everything.

It is impossible to read much of the present voluminous *reporting* literature from India without being struck—

1. With the state in which so many of the people in India live.
2. With their great intelligence (surpassing that of many of the Western nations), the great opening and willingness among so many for education, for improvement, for knowledge.

No doubt much of the willingness for education is due to the fact, appreciated by them, that education makes money. But would not the same appreciation, if enlightened, show them that loss of health, loss of strength, loss of life, is loss of money, the greatest loss of money we know. And we may truly say that every sanitary improvement which saves health and life is "worth its weight in gold" (as is the phrase).

An unhealthy people is always a poor people.

A dirty people is always an unhealthy people.

Take, for instance, the Central Provinces.

[And I must just allude to the fact that what is called a province in India has often twice the population of what is called a kingdom in Europe.]

We find from a very able report* on cholera that, in the limited district attacked, there are no fewer than 30,135 towns and villages, containing a population of nearly 8,000,000. 4,100 of these villages, with a population of upwards of 2,000,000, were attacked, and 47,848 people died.

Something about these villages we learn—just enough to show that everyone of them is worthy of a separate social study.

The people (men, women, and children), and animals appear to live together in many cases. The villages generally are in a most filthy condition. They appear never to be cleansed—and the people are as filthy as their dwellings—the water generally bad and unfit for use—filth of all kinds washed into the shallow ponds and shallow wells, or into the drying-up river beds from which the people take water almost poisonous. The domestic habits of many of these men, women, and children seem little better than those of the lowest class of animals.

Is it any wonder that nature in avenging her laws decimates those who transgress them in this way?

But worse than this—a long course of bad domestic habits brings moral blindness. The hard and fast link between pestilence and its determining causes is first lost sight of, next ignored, and then denied. Cholera is a bad thing. But there is a worse thing than cholera even and that is, that people should feel that nothing need be done—that nothing can be done—that what has always been is best.

Even the native doctors, who ought to know better, have fallen into this marsh of stupidity, we are told in one report.

Consider then eight millions of people in the central provinces living in 30,000 groups. Take in the rest of India. What a vast social problem it is!

But there is one good hopeful point and that is, that small groups of population of a few hundreds living in separate villages are far more easily kept in health and improved in habits than great masses of population living in cities.

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* Dr. Townsend's Report on Cholera in the Central Provinces. 1869.

It is perhaps not too much to say that the problem of keeping London in health with its three and a quarter millions is ten times as great and difficult as that of the eight millions of the central provinces.

Yet this has been solved—though much remains to be done—and it has been solved too with your own great city of Bombay, though much remains to be done.

Bombay is at this time healthier than London.

The people are awake to all the causes of unhealthiness, and cry out when cholera, fever, and small-pox appear—even in single deaths—that the causes ought to be removed ; whereas formerly half the population might be swept off, and the other half think it "all right."

Your own Calcutta, though not healthier than London, is healthier than Manchester or Liverpool since you have introduced your great works.

Shall we have solved the harder problems, and shall we give up the easier in despair? Never. God forbid.

Let us make model villages, as in England we make model dwelling-houses (in which good work the great husband of our beloved Queen laboured more than we all).

In these Indian villages little or no skilled labour appears to be necessary, except indeed where populations live on ground requiring extensive drainage works.

There is perhaps scarcely a village in India the inhabitants of which might not find among themselves all the labour required for keeping themselves clean and in health.

It is, after all, mainly a question of cleanliness and pure water. It is a true saying that "all smell indicates disease, and all smell indicates loss of money" (for it proves the loss of valuable manure).

Sanitary work in these villages would appear to be simple enough, and Government is providing efficient district sanitary inspectors, who could easily help the people by giving a proper direction to improvements.

At first it is to be feared that little good would be done without frequent inspections, without calling dirty people to account and persuading them to do better.

Could you not, gentlemen, who have formed this social science organisation, direct perhaps by means of enlightened natives of India, the attention of their countrymen on the spot to the need of personal exertion and personal help in improving the condition of towns, villages, and houses?

Merely to tell people what to do, though useful no doubt, is not all that is required. Enlightened personal influence is, above all, needed; as in the west, so in the east. Bring influence to bear at once on the improvement of a few villages by way of trial.

A little real work, as we shall all agree, is worth any amount almost of discussion or writing.

We shall also agree on a few main improvements, such as might be introduced at once:—

1. Drain away all stagnant water in and about the villages.
2. Fill up all holes and level the ground.
3. Make and improve the roads and lanes in the villages and in their neighbourhood, so that surface water may run off easily.
4. Dig a well or two in clean new ground away from the houses, and deep enough to obtain good drinking water. Build up the well inside and raise a coping all round the mouth of it to keep surface drainage from running back into it. Cover the mouth of the well and pave or concrete the ground about the mouth. If a pump cannot be had draw the water by a windlass and iron bucket and chain. The water-skin is a dangerous abomination.
5. One of the most filthy and injurious habits in India is fouling the ground, in compounds of houses, by cess-pits, and the ground in the neighbourhood of villages for purposes of nature. This foul habit is one of the principal causes of cholera and other epidemics. There is only one way to deal with it, and this is to make the people see that their present practice pollutes air, earth, and water, and kills themselves, while the proper use of all manure is to afford nourishment for vegetable life, and by so doing to keep man and beast alive.

   Covering and cropping ground which has been used for these purposes, or removing all filth daily and digging it into ground as manure for crops, would remove one of the most serious causes, not only of ill health but also of social degradation.
6. Some arrangements should be made for removing dung heaps to a safe distance from villages, and animals from the neighbourhood of dwelling-houses.
7. Could a few model dwellings with proper sanitary appliances be introduced here and there as examples of what might be done in the construction of healthy houses?

Example is the best teacher, and enlightened native gentlemen, especially landowners who have influence among the working population in town and country, might work miracles.

The munificence in charity of native men of rank in India is well known. Here is an equally noble and patriotic way of exercising charity.

In most country villages there is said to be provision of some kind for cleansing, which might be extended and made more systematic.

To interest the existing races in social questions of this kind a powerful engine might be found through the schools.

Is there any reason why Indian schools should not give some elementary instruction in physiology and the laws of health, but especially with reference to the destructive consequences of present filthy habits; to the binding character of natural laws—nature never forgives—and the duty and benefit and absolute necessity of acting in conformity with what these laws require, if we are to live and not degenerate but improve.

The object is that of all true lovers of their country, their God, and mankind. It is no less than rooting out of the vast empire of Indian soil pestilences like those which in former times scourged the world.

The work is still in progress everywhere—nowhere is it completed.

" The problem is not peculiar to India. Whole regions of the earth which were formerly " devastated by fever, pestilences, and dysenteries have long since been free from them, except " in the milder forms in which they now occasion part of the ordinary mortality ; and guided by " the light of experience we see no reason why India should form any exception to the rule that " in proportion as the conditions of health become better known and complied with, these diseases, " the opprobria of imperfect civilization, should diminish both in frequency and malignity."*

(Signed) FLORENCE NIGHTINGALE.

SANITARY REPORTS and PROCEEDINGS received from INDIA since 10th June 1869.

Report on Public Health, Births, and Deaths in British Burmah	1867–68
Report on Sanitary Arrangements at the Gurmooktessur Fair	1868
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Report on the Military Cantonments of Kamptee and Seetabuldee—Dr. Ranking	1869
Report on Drainage and Conservancy of Calcutta—Dr. Smith	1869
Report on Cholera of 1866, and its relation to Cholera of previous Epidemics—Dr. Bryden	1869
Report on Dispensaries—North-west Provinces	1868
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Report on Cholera of 1868 in Central Provinces—Dr. Townsend	1869
Rules on Management of important Fairs—North-west Provinces	1869
Outbreak of Cholera in Village of Akhoree, Mirzapore	1869
Report on Sanitary Condition of Districts in Meerut Division	1869
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Report on Sanitary Survey of Villages watered by the Western Jumna Canal	1869
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Report on Vaccination in Bengal—Dr. Murray	1869
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Report on Gaols in Bengal—Dr. Monat	1868
Report on Insane Asylums, Bengal—Dr. Murray	1868
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Report of the Calcutta Municipality	1869
First Report of Sanitary Commissioner—North-west Provinces	1868
Instructions for Surgeons on Emigrant Ships regarding Contagious Fever—Dr. Cuningham	1870
Report on Civil Dispensaries—Madras	1868–69
Report on Vaccine Operations in Punjab	1869
Monthly Proceedings of Sanitary Commissioner with the Government of India to December	1869
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* Report of the Royal Commission on the Sanitary State of the Indian Army.

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„	In Madras	21, 132.
„	In Bombay	39.
Water Supply	In Bengal	44, 71, 91, 207.
„	In Madras	107, 115, 132, 140.
„	In Bombay	31, 35, 36, 163, 177, 183.
Women and Children	*Vide* Sickness and Mortality.	—
	Z.	
Zanzibar	Cholera at	11.

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BENGAL SANITARY COMMISSION.

FIRST ANNUAL REPORT

OF THE

SANITARY COMMISSION FOR BENGAL, 1864-65,

WITH

APPENDIX, containing RETURNS of SICKNESS and MORTALITY among TROOPS in the BENGAL PRESIDENCY from 1858 to 1864;

TOGETHER WITH THE

RESOLUTION of the Governor General of India in Council thereon, dated 15th December 1865.

(PRESENTED TO PARLIAMENT BY HER MAJESTY'S COMMAND.)

Ordered, by The House of Commons, *to be Printed,*
28 *February* 1866.

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FIRST ANNUAL REPORT of the SANITARY COMMISSION for BENGAL, 1864-65; with APPENDIX, containing RETURNS of SICKNESS and MORTALITY among TROOPS in the BENGAL PRESIDENCY from 1858 to 1864; together with the RESOLUTION of the Governor General of India in Council thereon, dated 15th December 1865.

REPORT.

(No. 268.)

From *John Strachey*, Esq., President of the Sanitary Commission for Bengal, to Colonel *H. W. Norman*, C.B., Secretary to Government of India, Military Department.

Sir, Simla, 30 June 1865.

I HAVE the honour to submit the Report of the Sanitarry Commission for Bengal for the year 1864-65. In the orders under which the Commission was originally constituted, it was directed that "an Annual Report upon Public Health should be submitted to the Government by the Commission as soon after the 1st May as possible, treating of all the subjects that properly fall within its cognizance, and showing what has been done and proposed during the year." The Report will be in future prepared for the calendar year, in accordance with the orders that have lately been given by the Secretary of State and by the Government of India.

Appointment and duties of the Sanitary Commission.

2. This being our first Report, it is desirable that we should state briefly the circumstances under which the Commission was appointed, and the nature of the duties that have devolved upon it.

The appointment of a Sanitary Commission at each of the Presidencies in India was one of the recommendations made in the Report, submitted in May 1863, by the Royal Commission appointed to inquire into the sanitary state of the Army in India. It was recommended that these Commissions should be "so constituted as to represent the various elements, civil, military, engineering, sanitary, and medical; to give advice and assistance in all matters relating to the public health, such as selection of new stations, and the sanitary improvement of existing stations and bazaars; to examine new plans for barracks and hospitals; to advise on the laying out of stations and bazaars, the sanitary improvement of native towns, prevention and mitigation of epidemic diseases, and generally to exercise a constant oversight on the sanitary condition of the population, European and native; to report on the prevalence, causes, and means of preventing sickness and disease."

In accordance with this recommendation, and with the instructions of the Secretary of State, the formation of Sanitary Commissions was ordered by the Government of India, and in February 1864 the Commission for this Presidency was appointed. It was determined that the President of the Commission should be a civil officer, and the secretary a medical officer; and that one other medical, and two military officers, one of them an officer of engineers, should be members. The president and secretary were to devote their whole time to the work of the Commission; the duties of the other members were to be performed in addition to those of their regular offices. The orders of the Government of India, No. 1044, dated 29th February 1864, describe the nature of the work which the Commission was expected to perform, and indicate generally the intentions and wishes of the Government. It was stated that the primary object was the diminution of mortality in the Army, and the improvement of its sani-

tary condition, but that it was impossible that these objects should be attained unless measures were also taken for the improvement of the public health generally, and for the prevention of the more obvious causes of disease among the community at large. The Commission is a purely consultative body, and has no executive functions.

Objects of present Report.

3. The questions that have come before the Commission since it was appointed have been very numerous, and separate reports regarding many of them have been submitted to the Government. In those reports we have fully described the principal sanitary evils which have come to our notice, and have made suggestions for their removal. In the present report we shall, for the most part, deal with another side of the question. It will be less our object to point out the remedies for defects than to show the existing state of things; to describe the principal measures of sanitary importance which have been carried out or proposed during the past year by the Government; to give a true representation of the present sanitary state of the Army, and, so far as the imperfect means at our disposal will allow, of other classes of the population.

Present rate of mortality among the European troops in India lower than that stated by the Royal Commission.

4. The Report of the Royal Commission gave a very unfavourable account of the sanitary condition of the Army in India.

The statement, frequently reported in that Report, that 69 per thousand has been the average annual rate of mortality among the British troops in India, has been considered in a Despatch from the Government of India to the Secretary of State, which has been published and laid before Parliament, and the question has been so fully discussed, that it is unnecessary that we should again enter into it at length. It will be sufficient if we make a few remarks upon the subject.

That the average annual rate of mortality in the Army in India, between the years 1800 and 1856, was 69 per thousand, must be accepted as a fact, and when the Royal Commission declared that these figures represented the expense at which we had held dominion in India during the past century, the conclusion was undoubtedly correct. If nothing more than this had been asserted, there would have been no room for calling in question the justice of the statement, but it was assumed by the Commission that this rate of 69 per thousand represented the actual mortality in the Army in India at the time when the Report was issued; and this assumption is certainly not correct.

In 1857 the Royal Commissioners appointed to inquire into the Regulations affecting the sanitary condition of the Army, stated in their Report that the average annual rate of mortality in the infantry at home was 18·7 per thousand, and in the Foot Guards 20·4 per thousand. Since that time the rate of mortality in the army at home has been reduced to half the former amount, and it does not now exceed 9 or 10 per thousand. There is no more reason or saying that the average rate of mortality in the army in India is now 69 per thousand, than for saying that the rate in the army at home is 18 or 20 per thousand. The figures are as obsolete in the one case as in the other. The improvement in the health of the army has been immense in both countries; it has been effected in both cases during the same period, and it has been mainly due to the same cause, the great efforts that have been made to improve the condition of the soldier, and to protect him against the more serious causes of disease. It may be confidently stated that those efforts have been even greater in India than at home, and the result has been that the rate of mortality in India is probably not higher at the present time than that which prevailed 10 years ago in England.

We have stated that the death-rate of 69 per thousand for the period between 1800 and 1856, is to be accepted as a fact. For at least 10 years, however, before 1856, the average mortality was not nearly so high as this, unless in exceptional cases, when it was raised by war or by a violent epidemic of cholera. To make up the death-rate of 69 per thousand, all the deaths were included which occurred in the army during the first half of this century, a period of frequent war and commotion. This period includes the campaigns of Lord Lake and Sir Arthur Wellesley, against the Marhattas; the Pindaree war; the two Companies against Nepal; the two Burmese wars; one of them prolonged and fatal; the disastrous war in Affghanistan; the wars in Seinde and Gwalior, and the two wars in the Punjab with all their bloody battles. It was assumed by the Royal Commission, on the authority of Sir A. Tulloch, that 10 deaths

deaths per thousand out of the whole number, were due to the various wars between 1817 and 1855, but there is nothing to show what confidence this estimate deserves. It is, we think, unlikely that it should be worth much, for it is hardly possible, in a country like this, to estimate the amount of sickness and mortality caused by war. It may easily happen that troops far away from the scene of action may suffer more severely than those which are actually engaged with the enemy. Serious war in India almost invariably disturbs all military arrangements throughout the whole country; it often involves the necessity of marches in hot and unhealthy seasons; it throws additional labour upon the soldiers, wherever they may be stationed, and causes additional exposure to the climate.

To whatever extent the rate of mortality in the army in India may have been actually raised by the mode of calculation adopted by the Royal Commission, the principle involved appears to us to be faulty. It has been truly remarked that if we were to reckon up all the deaths that have taken place in the French army since the beginning of the century, including those which occurred in the great battles of the first Napoleon, and those of the three or four hundred thousand men who perished in the retreat from Moscow, if we were to quote the enormous death-rate which we should thus obtain as the normal rate of mortality in the French Army at the present time, and were to draw from this death-rate the conclusion that the present sanitary condition of the French Army was unsatisfactory, and discreditable to the existing Government of France, we should be taking a similar course to that which has been followed by the Royal Commission. We by no means, however, intend to assert that the exaggeration of the rate of mortality in the case of the army in India has been actually as great as it would be in the case which has been supposed.

In further illustration of our meaning, and by way of caution against placing a wrong value upon the figures which we have ourselves given in this Report, we borrow from the Report of the Cholera Commission the following remarks upon arithmetical averages: "People are too much in the habit of considering that average or mean results have necessarily a real signification and represent facts. Very often, although the assertion may seem paradoxical, this is far from being the case. An average or mean is strictly an abstract arithmetical idea, and in that sense every such means, properly calculated, is correct; but when we come to apply this abstract idea to facts, and to inquire its signification, we shall see that it may, in some cases, have no tangible or useful meaning whatever. Thus, if we had before us 100 objects, one of which was 1,001 feet high, while the remaining 99 were each one foot high, we should say quite correctly in one sense that the average height of the whole was 11 feet. But, in fact the height of none of the objects could be at all near to 11 feet, and the arithmetical idea could not have any useful significance. It would, in truth, confuse us, and lead us wrong instead of assisting our apprehension of the facts. In the example first given, a little consideration will show that the series of facts are not properly comparable; that we have one series of facts of one sort, and another of another sort; and that although we may arbitrarily and in an abstract way talk of them as a whole, yet in matter of fact they are distinct, and cannot properly be viewed together in respect of their height, the sense in which we have been considering them. The only legitimate way of dealing with such an assemblage of facts is to consider them in groups that are properly comparable. In very many cases the difference between false and true induction lies in our success in making such distinctions properly." *

We observe that this principle has been carefully acted upon in the preparation of the Medical Statistics of the French Army. Whenever a body of troops has been placed under circumstances which are evidently peculiar, it is considered that its statistics of mortality and disease must form the subject of special investigation, and must be kept entirely separate from those of the rest of the army which has been living under ordinary conditions.†

Dr. Bryden's statistical returns of sickness and mortality.

5. Before speaking in detail of statistical results, we desire to notice that nearly the whole of the figures given in the body of this Report are derived from

* Report of Cholera Commission, page 214.
† Vide "Statistique Médicale de l'Armée," 1862.

from Dr. Bryden's Tables; and it has been thought desirable to reprint the whole of these in an Appendix. We cannot acknowledge too fully the valuable assistance of every kind which Dr. Bryden has at all times given to us. For some time past he has been specially employed, under the orders of the Government of India, in the Statistical Branch of the Medical Department in Calcutta, in the preparation of these Returns. We believe them to be far more complete and trustworthy than any returns of the kind that have ever been published, and Dr. Bryden deserves the greatest credit for the manner in which, under circumstances of peculiar difficulty, this work has been performed. We had hoped to have been able to include with the present Report Dr. Bryden's remarks upon his own Tables, but it has been found more convenient to submit these to the Government separately. It will be highly interesting to learn the conclusions to which Dr. Bryden has been led by his minute study of these statistics of mortality and disease.*

Rates of mortality among the European troops in Bengal before the mutinies.

6. According to Dr. Bryden's Tables, the sickness, mortality, and invaliding among the European troops in the Bengal Presidency, including Burmah and Pegu, during the five years ending with 31st March 1857, were as follows:—

TABLE I.

YEAR.	Average Strength.	Ratio per Thousand of Average Strength.				
		Daily Sick.	Admitted.	Died in Hospital.	Died out of Hospital.	Invalided.
1852–53 - - - - -	20,865	92·9	2,393	59·9	2·9	27·3
1853–54 - - - - -	21,505	77·8	1,887	46·6	2·0	25·5
1854–55 - - - - -	20,046	86·6	2,221	50·0	1·9	23·9
1855–56 - - - - -	19,885	81·7	2,247	33·1	1·4	27·7
1856–57 - - - - -	21,304	88·0	2,787	70·0	1·5	32·7

The excessive mortality in 1856–57 was due to a violent epidemic of cholera, which caused the death of 33 per thousand of the whole force. Although the average rates of mortality for the five years shown in the above Table is considerably less than the estimate of the Royal Commission, it will be seen that it was nevertheless extremely high. In other respects these figures are quite as unfavourable as those given by the Royal Commission. Their report states that "1,000 British soldiers at home experience about 1,000 attacks of sickness in the year, but in India the soldier's sickness is doubled. A battalion of 1,000 men (in Bengal) sent yearly, on an average, 2,045 cases to the hospitals: each soldier in India was exposed, therefore, to two attacks of illness in the year instead of one."† It is stated in another place that "on an average, in the stations in Bengal, 84 men in a battalion of 1,000 were constantly in hospital." These statements are quite borne out by the foregoing Table.

For the last nine months of 1857, the first year of the Indian mutiny, we have no returns in which we have confidence, but the circumstances under which the troops were placed were so entirely exceptional, that this is of little importance so far as our present objects are concerned. In 1858 the troops were exposed to almost as great an extent as in the previous year. The rate of mortality rose to 100·6 per thousand, of which all except 4·3 was due to disease, and

* It is desirable to notice that the term "European troops" used in this Report, and in Dr. Bryden's Tables, is the term which was commonly adopted in India before the amalgamation of the two armies, to include both Her Majesty's British troops and those in the service of the Indian Government. These Returns for "European troops" will therefore necessarily differ from those from Her Majesty's British forces, for all the years before the amalgamation was completed. In future, it will, we think, be desirable to discard the term "European troops" altogether.

† Report, 8vo. edit. p. 29.

and not to loss in action. During the same year, the number daily sick was 122·6 per thousand, and the number admitted into hospital was 3,111 per thousand. *

7. With the return of peace in 1859, there was a great improvement in the health of the Army, although for a considerable part of the year the accommodation provided was necessarily insufficient, and the troops were still suffering from the effects of the mutinies. The following table shows the general results from 1859 up to the end of 1864.

Return of mortality among European troops from 1859 to 1864.

TABLE II.

YEAR.	Average Strength.	Ratio per Thousand of Average Strength.				
		Daily Sick.	Admitted.	Died in Hospital.	Died out of Hospital.	Invalided.
1859	55,104	90·3	2,229	44·0	1·4	34·4 †
1860	48,901	83·9	2,052	35·6	1·1	34·4 †
1861	44,879	82·0	2,046	44·8	1·2	28·1
1862	42,980	76·8	1,971	26·8	1·3	31·5
1863	41,351	69·6	1,839	22·5	2·6	35·0
1864	40,385	62·1	1,641	19·5	1·4	36·8

8. In 1861 the most fatal epidemic of cholera occurred that has ever been known in India. During the year, there were 1,663 admissions, and 1,065 deaths in the Bengal Presidency from this disease. Of this number no less than 725 admissions and 450 deaths occurred at the single station of Meean Meer; including men, women, and children, the whole force at Meean Meer was 2,452, and out of this number 880 were attacked by cholera, and 535 died in the space of little more than a month. At Morar, during an almost equally short space of time, 152 soldiers died, out of 210 that were attacked. The Special Commission that was appointed by the Government of India to inquire into this epidemic was strongly of opinion that in both these cases the mortality was aggravated to an enormous extent by extreme mismanagement. If it had not been for this, the year 1861 would have formed no exception to the steady improvement that has been going on in the health of the army since 1859.

Rate of mortality in 1861 raised by epidemic cholera.

9. In a report submitted by our Commission last year, it was stated with reference to the Returns for 1863: "There are 46 principal military stations. In 28 of these, containing about three-fourths of the whole force, the death rate in 1863 was less than 20 per thousand; in 18 stations it was under 13 per thousand, and in eight stations it was under 10 per thousand. We have no access at present to the returns for Madras and Bombay, but we believe that it may be safely stated that the mortality in the army in India during the last two years has been little, if at all, more than 20 per thousand, the rate which prevailed among the Guards at home only six years ago, and which the Royal Commissioners in their report considered might become the death rate in India under improved sanitary conditions." It will be seen from the detailed returns given in the Appendix to this Report that the results in 1864 were still more satisfactory. The average rate of mortality for the army in this Presidency was lower than it had ever been in any previous year, except in Bengal Proper, and in the districts including Dinapore, Benares, Oudh, and Cawnpore, the average

Rates of mortality among European troops in 1863 and 1864.

* *Vide* Appendix.

† In consequence of the change made from 1st January 1860 in the period for furnishing the annual returns of the army in India, the invaliding of 1859 and 1860 has been mixed up. The mean for the two seasons has therefore been taken.

average mortality was less than 18 per thousand, and in the Punjab, which contains a larger proportion of the army than any other province in India, the rate was only 14·5 per thousand, or, excluding deaths out of hospital, only 13·2 per thousand.

Sickness and mortality among European troops in 1864.

10. The following table shows the amount of sickness and mortality among the European troops in the several provinces of the Bengal Presidency for the year 1864.

TABLE III.

PROVINCE.	Average Strength.	Ratio per Thousand of Average Strength.					
		Daily Sick.	Admitted.	Died in Hospital.	Died out of Hospital.	Died from all causes.	Died from cholera.
Bengal Proper - -	2,002	61·9	1,510	20·5	4·5	25·0	2·5
Dinapoor, Benares, Oudh, and Cawnpore.	10,333	59·9	1,420	25·4	1·1	26·5	6·8
Meerut and Rohilkhund	5,950	72·4	1,688	16·8	·8	17·6	·2
Agra and Central India -	4,854	64·5	1,871	16·5	·8	17·3	·6
Punjab - - -	15,886	56·1	1,698	13·2	1·3	14·5	·06
Troops on the march, invalids, recruits, &c.	—	—	—	—	—	—	—
TOTAL Bengal Presidency	40,385	62·1	1,641	19·5	1·4	20·9	2·4

Great improvement in the health of the army.

11. The returns in the Appendix show that the army in this Presidency during 1864 was distributed at 54 stations. At 41 of these stations, occupied by nearly three-fourths of the whole force, the rate of mortality was less than 20 per thousand; there were only seven stations in which it exceeded 25 per thousand; and in 12 stations it was under 10 per thousand.*

The facts that have been stated fully justify the conclusion which has been expressed above, that the death-rate of 69 per thousand which the Royal Commission considered applicable to the army in India, when its report was written, has become entirely a thing of the past. The present rate of mortality in India hardly exceeds the rates which prevailed among the infantry and Guards at home for the 15 years ending with 1853, when they were 18 and 20 per thousand. It falls far short of the rate, 38 per thousand, which the Royal Commission considered to be applicable to the officers of the army in India; and it hardly exceeds the rate, 20 per thousand, which, according to the Commission, prevailed among the civil servants of the Government in India at the soldiers' ages, and among the native troops.

The foregoing tables show also that it is not only in the rate of mortality that there has been this great and progressive improvement. The number of men constantly sick, which before the mutinies, according to the very moderate estimate of the Royal Commission, was 84 per thousand, has gradually fallen until in 1864 it was 62 per thousand, It was 54·5 per thousand in the United Kingdom in 1861. In a similar manner, the number of annual admissions into hospital, which before the mutinies exceeded 2,000 per thousand men, has gradually fallen to 1,641 in 1864. It was 1,025 per thousand men in the United Kingdom in 1861.

Rates of mortality among European troops in Madras and Bombay.

12. We have no detailed returns showing the mortality of the army in Madras and Bombay during the last few years, but these Presidencies have almost always been more healthy than Bengal, and that there can be no doubt that the death-rate of 69 per thousand given by the Royal Commission for India generally is still less applicable to them than it is to us.

According to a Return, dated 30th May last, prepared at the Horse Guards, and presented to the House of Commons, the rates of mortality per thousand of

* This does not include the men at convalescent depôts, the rates of mortality at which are always, and necessarily, exceptionally high.

of average strength in Her Majesty's forces in the Madras and Bombay Presidencies during the last five years have been as follows:—

Year.	Madras.	Bombay.
1860	20·4	29·1
1861	15·7	21·3
1862	19·6	25·5
1863	19·2	13·2
1864	20·1	15·8

Stations at which the mortality exceeded 20 per thousand in 1864.

13. No proper arrangements having been organized for furnishing to our Commission regular returns and reports, the remarks will be very imperfect which we are able to make regarding the sickness and mortality at particular stations during 1864. It is hoped that in future we shall have access to more complete sources of information, under the arrangements which are now under the consideration of the Government, and which contemplate the establishment of an efficient system for recording and reporting all available facts of statistical and sanitary interest. Details for every station, showing the amount of sickness and mortality from all the principal diseases, will be found in the Appendix to this Report.

The following Table shows all the stations in which the mortality in hospital during the year exceeded 20 per thousand:—

Table IV.

Station.	Average Strength.	Ratio per Thousand of Average Strength.					
		Daily Sick.	Admitted.	Died from Cholera.	Died in Hospital, not including Cholera.	Died out of Hospital.	Died from all Causes.
Barrackpore	455	52·3	1,536	4·4	33·0	2·2	39·6
Berhampore	202	48·9	1,253	–	24·8	–	24·8
Dinapore	968	75·4	1,693	5·2	17·6	1·0	23·8
Benares	1,081	75·7	1,692	5·6	20·4	1·9	27·8
Lucknow	2,470	60·4	1,706	15·8	27·9	·8	44·5
Cawnpore	1,131	57·9	1,292	5·3	19·5	·9	25·6
Allahabad	950	59·9	1,236	12·6	11·6	1·1	25·3
Delhi	964	89·4	2,378	–	21·8	1·0	22·8
Saugor	817	79·8	2,397	2·5	18·4	1·2	22·0
Umritsur and Govindgurh	501	68·0	2,293	–	24·0	–	24·0
Meean Meer	910	62·8	1,713	1·1	22·0	2·2	25·3

Mortality at Lucknow and other stations.

14. The rate of mortality at Lucknow during 1864 was higher than in any station in this Presidency, being 44·5 per thousand, out of which amount 15·8 was due to cholera alone. The troops at Lucknow consisted of the 107th and 36th Regiments, the 5th Lancers, and four batteries of Artillery. The 107th is an old and seasoned regiment. It lost 22 men out of an average strength of 894, or 24·6 per thousand, and one half of the deaths occurred in one week from cholera. The Artillery lost only five men. The 36th Regiment arrived from England at the end of 1863, and reached Lucknow in a tolerably healthy condition in January. "It continued," writes the surgeon of the regiment, Dr. Bell, "in a good sanitary state till April, when the increasing heat of the weather began to tell on the young unseasoned soldiers, and fevers became prevalent. They presented no great variety; a few have been returned as 'common continued;' there were only 24 cases of 'intermittent;' the rest were returned as 'remittent,' but of these at least 10 cases might with equal correctness be called typhoid. * * The result is one for which I was wholly unprepared from my six years' experience in Madras, viz., that a typhoid fever almost identical with that of Europe, with ulceration of Peyer's glands prevails in this country, and is as fatal as at home. It seems the same disease in every respect, but that there are no petechiæ, and there is greater tendency to remissions.

sions. From the inquiries I have made, I believe it to be a new disease in this country, and it is certainly a very fatal one. * * This disease prevailed all through the hot season, from July to October, and proved fatal in seven cases."

There were six cases of heat apoplexy, and all were fatal except one. They all occurred during the hottest weather of the year, and in the opinion of the medical officers were caused entirely by the intense heat. On the 15th September, cholera attacked the regiment, and proved fatal in 27 cases, all of which, with one exception, occurred within a week after the first outbreak of the disease.

There were six fatal cases of phthisis, and 39 men were invalided from the same cause. In 19 cases this disease was a sequela of fever. It has been thought that many of these cases which were recorded as phthisis may have been closely related to the fatal fever which has been noticed above; and there has been a suspicion that the great mortality from these diseases in this regiment may have been really due to an attack of the same fever which, as we have stated elsewhere, has proved so fatal in some of the gaols. This, however, is a point which cannot at present be cleared up. Altogether, the 36th Regiment lost 60 men during the year. We have made a special reference to the Medical Department on the subject of the fever which proved so fatal at Lucknow, and upon other points connected with the health of the troops at the station, and we hope that further information may be obtained. The 5th Lancers also suffered severely, losing 20 men during the year. A fever, which was apparently similar to that which prevailed in the 36th Regiment, proved fatal in five cases. There were three fatal cases of heat apoplexy and one of cholera.

The causes, independently of cholera, which led to the large mortality in the 36th Regiment and in the 5th Lancers, while the Artillery and the 107th Regiment escaped with comparatively little sickness, have not been explained, except by the fact that the two former were new to the country, and unacclimatized. It may be doubted whether this explanation is sufficient. We have not been able to discover that the local sanitary conditions under which the regiments were placed differed to any important extent, or that there were any special differences in the management of the men. In all cases, the amount of space allowed in barracks and hospitals appears to have been ample. The attack of cholera, which was so fatal, happily lasted for only a few days. Immediately on its appearance, the men were removed into camp, and there can be no doubt that this measure had the almost immediate effect of stopping the disease. Lucknow has, on several former occasions, suffered severely from cholera: but, with the exception of 1863, when the rate of mortality was 28·5 per thousand, the station has been, for some years past, healthier than the average. In 1861 the mortality was only 14 per thousand, and in 1862 it was 15·3 per thousand.

With the exception of Barrackpore, regarding which station further information has been called for, it will be observed from the foregoing table that in almost every case in which the rate of mortality exceeded 20 per thousand, cholera was the cause. The removal of the troops from the station was carried out in all instances, and in all with decided benefit.

The rate of mortality at Meean Meer was unduly raised by the death of eight men, who belonged to regiments at other stations.

The preceding table gives a good illustration of the manner in which the average rate of mortality for the whole army is often raised by an unusual number of deaths from some special causes, at a very few stations. The omission of the single station of Lucknow would reduce the death-rate for 1864 to 19·4 per thousand, and the omission of the 11 stations named in the table would reduce it to 17·8 per thousand.

Mortality caused by the principal diseases.

15. "The great endemic diseases of India" (we quote from the Report of the Royal Commission), "those which injure the health or destroy the life of the British soldier, are fevers, dysenteries, diseases of the liver, and epidemic cholera, which has for many years engrafted itself on the endemics of the country. Compared with these, all other diseases are of minor extent and importance." The truth of these remarks is illustrated by the following Table, which

which shows that these diseases, and heat apoplexy, have caused nearly four-fifths of the total mortality in the army in this Presidency for the last five years.

TABLE V.

YEAR.	Total Deaths from all Causes.	Died from					
		Fevers.	Dysentery.	Diarrhœa.	Heat Apoplexy.	Hepatitis.	Cholera.
1860 - - - -	1,743	237	229	130	125	172	589
1861 - - - -	2,009	178	165	76	60	130	1,065
1862 - - - -	1,153	144	114	39	51	130	413
1863 - - - -	930	117	121	33	45	150	169
1864 - - - -	846	127	67	27	59	119	97
TOTAL Deaths, 1860–1864	6,681	803	696	305	340	701	2,333

16. All these diseases invariably reach their maximum in the hotter months of the year, and throughout the greater part of India the troops are probably as healthy in the cold season as in any country in the world. Greater prevalence of disease in the hot season.

The extent to which the heat of the climate predisposes European constitutions to disease, and aggravates the influence of causes hostile to health, is illustrated by the following Table. The number of deaths from each disease being assumed to be 100, the Table shows the proportion of the whole number occurring in the three coldest months, and in three months of the hot and rainy season. The figures represent the average results of the five years ending with 1863.

The great difference in the mortality during the two seasons will be seen at a glance. It is only in the case of diseases of the respiratory organs that the rates are higher in the cold than in the hot months :—

TABLE VI.

CAUSE OF DEATH.	Died per Cent. of Total Deaths from each Cause.					
	December.	January.	February.	July.	August.	September.
Fevers - - -	3·9	3·3	1·8	10·0	11·7	13·5
Dysentery - - -	5·7	5·4	3·2	8·0	13·8	15·0
Diarrhœa - - -	7·7	5·8	3·1	8·3	14·1	14·4
Heat Apoplexy - -	1·2	·4	1·4	23·3	8·3	6·5
Hepatitis - - -	9·1	6·2	5·9	8·2	10·0	11·2
Cholera - - -	·4	·2	1·1	15·6	47·1	10·2
Respiratory Diseases -	13·0	14·2	9·6	5·0	5·0	6·7
Phthisis Pulmonalis -	8·1	7·2	5·3	10·6	10·6	9·2
Delirium Tremens -	5·9	3·0	1·5	8·9	8·2	14·8

The same facts are illustrated by the following Table, showing the number daily sick, and the number of admissions into hospital, per thousand of strength, from all causes, during the cold and hot months respectively:—*

TABLE VII.

	Rates per Thousand of Average Strength.					
	December.	January.	February.	July.	August.	September.
Daily sick, 1859-63 -	66·6	70·1	70·5	87·9	92·3	92·5
„ 1864 -	48·7	49·9	56·3	69·3	66·9	71·8
Admitted, 1859-63 -	1,412	1,305	1,162	2,075	1,995	1,945
„ 1864 -	1,039	1,001	998	1,384	1,703	1,481

Relation between meteorological phenomena and prevalence of disease. Influence of climate.

17. The nature of the relation between meteorological phenomena in India and the prevalence of disease is a subject which has been little studied, but which possesses great interest and importance. The regularity with which certain diseases invariably recur in an epidemic form at certain seasons is very remarkable. This has been shown very clearly with respect to Calcutta by Dr. Hugh Macpherson.† A summary of the facts has been given in the Report of the Cholera Commission, and we take from it the following account.‡ It is shown that cholera is always present in Calcutta; that it invariably reaches its lowest point every year about August; that it then gradually rises through the autumn and winter, reaches its climax in April, when it causes more than half the total number of deaths, and then again falls regularly until August. The annual rise and fall of small-pox in Calcutta nearly corresponds with that of cholera. On the other hand, when cholera is at its minimum, the number of deaths from dysentery and diarrhœa reaches its maximum. The apparent relation is obvious between the meteorological conditions which characterise the ordinary climate of the year in Calcutta and the variations in the mortality from cholera. When the air is almost at its driest, and the temperature almost at its maximum of heat, before the commencement of the periodical rains, cholera reaches its climax. When the rainy season is at its height, cholera is at its lowest point, and with the diminution and cessation of the rains cholera again increases.

If we compare these facts with those which hold good in the North Western Provinces, we find a most remarkable contrast, although the relation between meteorological phenomena and the disease is marked in an equally striking and interesting manner. In the North Western Provinces, when cholera becomes epidemic, it almost invariably commences with the hot season, it reaches its climax with the maximum of rain in July and August, and then falls gradually until it almost ceases in the winter. The apparent relation between the progress of cholera and the season of the year is as well marked in the North Western Provinces as it is in Calcutta. In the diagrams given in the Report of the Cholera Commission, it is curious to observe how exactly the curves of cholera correspond with those of rainfall, of tension of vapour, of temperature, and of barometric pressure, and how remarkable a contrast they offer to the curves for Calcutta, the disease reaching its maximum in the one case at the very time when it reaches its minimum in the other. "So far as our information extends, this is a branch of inquiry in which literally nothing has been accomplished; nor, indeed, can we find that any serious attempt has hitherto been made in India even to point out its importance. It would be difficult to find a better example of the vast practical interest of those statistics of science, the collection of which has hardly, up to the present time, been commenced. Although

* See para. 29 and Table XVI, showing the comparative amount of disease among the European and native troops in the hot and cold seasons.

† On the mortality of Calcutta during the 20 years ending 1860.—*Indian Annals of Medical Science*, 1862.

‡ Report, p 181.

Although we can draw no conclusion regarding the actual nature of the relations that exist between meteorological conditions and cholera, it is evident that those relations are real. When we consider the regularity with which the same phenomena constantly recur, and the excellence of the opportunies which exist for their observation, we cannot doubt that it is within the power of science to solve many problems regarding them, which nothing but our deliberate neglect and ignorance have suffered to remain in mystery.*

The meteorological observations that have hitherto been recorded in this Presidency are most imperfect, and our knowledge of the climate is consequently very incomplete. Our Commission is about to submit to the Government propositions for carrying out systematically the observation and record of meteorological phenomena in India.

Although the importance of the influence exercised by local sanitary conditions, other than those due to mere climate, can hardly be estimated too highly; a fact of which there can be no better proof than the actual diminution that has occurred in the sickness and mortality in the army; there has perhaps been a tendency among sanitary reformers to under-value the importance of the influence produced by climate alone in India on European constitutions. However complete may be our sanitary improvements, and however great may be our success in getting rid of obviously removeable causes of disease, we cannot hope that the mortality among our countrymen in India will ever fall to the rate which prevails in healthy districts in Europe. The Royal Commission stated its belief "that two per cent. (double the rate at home stations since the introduction of sanitary improvements) may be taken as the possible mortality, under improved sanitary conditions," of the troops in India. This expectation has already been fulfilled, and we may reasonably hope for still further improvement. But when the Royal Commission goes on to say that the time may possibly come when "we may cherish the hope of realising what statistical inquiries appear to point to, namely, that the natural death-rate in times of peace of men of the soldiers' ages in India will be no more than 10 per thousand per annum," we fear that the hope is too sanguine.

Importance of climatic influences.

18. The following Table, taken from Dr. Bryden's Report, gives the means of comparing the rate of mortality from the principal diseases in the European and native army in the Bengal Presidency, with that which prevails in the army in the United Kingdom. These figures illustrate in a forcible manner the importance of purely climatic influences. It will be seen how different is the character of the most fatal diseases of the two countries:—

TABLE IX.

DISEASE.	Died in Hospital per Thousand of Average Strength.		
	European Army, Bengal Presidency, 1862-64.	Army, United Kingdom, 1859-61.	Native Army, Bengal Presidency, 1862-64.
Cholera	5·5	—	1·9
Small Pox	·2	·1	·2
Heat Apoplexy	1·2	—	—
Apoplexy and Brain Affection	—	·5	·3
Fevers	3·1	·6	4·1
Dysentery and Diarrhœa	3·2	·1	2·6
Hepatitis	3·2	·2	·2
Phthisis Pulmonalis	1·9	3·7	·4
Chest Affections	1·0	1·5	1·6
Heart Diseases	·6	·8	·1
Delirium Tremens	·4	·1	—
Injuries	·3	·9	·3
All other Causes	2·4	1·3	1·8
All Causes	23·1	9·6	13·5

19. The

* Report of Cholera Commission, p. 183.

Mortality among European troops in the several provinces of the Bengal Presidency.

19. The following Table shows the mortality among the European troops from the principal diseases during the last three years in the several Provinces of the Bengal Presidency :—

TABLE X.

YEAR.	PROVINCE, AND AVERAGE STRENGTH.	RATIO PER THOUSAND OF AVERAGE STRENGTH.													
		All Causes.		Cholera.		Fever.		Heat Apoplexy.		Dysentery.		Diarrhœa.		Hepatitis.	
		Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1862	Bengal Proper, 2,457	1494·	26·5	7·	6·1	463·	3·7	2·	2·0	48·	2·4	137·	·4	49·	2·8
„	Dinapore, Benares, and Oudh, 8,951	1516·	14·0	1·	·1	441·	3·4	·2	–	46·	2·1	86·	·1	47·	3·0
„	Cawnpore, Meerut, and Rohilkhund, 9,810.	1842·	22·3	6·	3·7	581·	5·7	2·	1·1	51·	3·0	121·	1·1	75·	4·0
„	Agra and Central India, 5,429	2676·	47·5	39·	26·9	1507·	5·5	3·	2·0	54·	3·0	133·	·9	69·	2·8
„	Punjab, 15,930	2103·	27·8	23·	12·7	972·	3·0	2·	1·4	42·	2·4	125·	1·0	60·	2·5
1862	Bengal Presidency, 42,980	1971·	26·8	16·	9·6	806·	3·3	2·	1·2	49·	2·7	120·	·9	62·	3·0
1863	Bengal Proper, 1,893	1701·	20·6	5·	3·2	592·	3·2	2·	1·1	100·	4·7	123·	·5	62·	1·1
„	Dinapore, Benares, and Oudh, 8,647	1576·	21·7	11·	7·6	476·	1·4	1·	·6	45·	1·5	96·	·2	60·	4·6
„	Cawnpore, Meerut, and Rohilkhund, 9,209.	1635·	28·8	9·	7·6	462·	2·6	3·	1·3	46·	2·8	105·	1·3	57·	4·5
„	Agra and Central India, 5,493	1902·	21·9	6·	3·8	738·	3·6	2·	1·1	60·	3·1	109·	·6	53·	3·6
„	Punjab, 15,660	2070·	18·1	·1	·1	1076·	3·5	3·	1·3	39·	3·2	81·	·9	71·	2·7
1863	Bengal Presidency, 41,351	1838·	22·5	6·	4·1	739·	2·8	2·	1·1	49·	2·9	96·	·8	64·	3·6
1864	Bengal Proper, 2,002	1511·	25·0	6·	2·5	423·	5·	2·	·5	40·	3·5	140·	·5	38·	2·5
„	Dinapore, Benares, and Oudh, and Cawnpore, 10,333.	1420·	26·5	9·	6·8	432·	4·	3·	2·4	41·	1·7	123·	·9	47·	2·4
„	Meerut and Rohilkhund, 5,950	1688·	17·7	2·	2·	450·	2·5	2·	1·3	34·	1·4	82·	·7	67·	4·
„	Agra and Central India, 4,854	1871·	17·3	8·	·6	670·	2·8	2·	1·0	34·	2·5	103·	·6	3·	2·5
„	Punjab, 15,886	1698·	14·5	·1	·1	720·	1·9	2·	1·0	31·	1·3	75·	·5	62·	
1864	Bengal Presidency, 40,385	1641·	21·0	3·	2·4	542·	3·1	2·	1·5	36·	1·6	9·8	·7	56·	3·0

Gradual diminution of disease among European troops.

20. The gradual diminution of serious disease in the army during the last six years is further illustrated by the following table :—

TABLE XI.

DISEASE.	Died per Thousand of Average Strength.					
	1859.	1860.	1861.	1862.	1863.	1864.
Cholera	8·7	12·0	23·7	9·6	4·1	2·4
Fevers	6·6	4·9	4·0	3·3	2·8	3·1
Heat Apoplexy	4·1	2·6	1·3	1·2	1·1	1·5
Delirium Tremens	·7	·8	·5	·4	·5	·4
Dysentery	10·2	4·7	3·7	2·7	2·9	1·6
Diarrhœa	2·4	1·0	1·7	·9	·8	·7
Hepatitis	4·9	3·5	2·9	3·0	3·6	3·0
Phthisis Pulmonalis	1·8	1·7	1·9	1·9	2·2	1·6
All Causes	44·0	35·6	44·8	26·9	22·5	21·0

21. The

21. The returns that are at present available for showing the mortality among officers of the army in India and among women and children are very imperfect. We hope that this deficiency will be supplied in future returns. Rate of mortality among officers of the army.

According to the Report of the Royal Commission, the average annual rate of mortality among officers of the Indian army from 1814 to 1833 was 38 per thousand, and it appears to have been considered that this rate represented, at least approximately, the mortality at the time when the report was published. There can be no doubt, however, that the actual rate has been for many years much lower than 38 per thousand; probably it is not at the present time one-half of this amount. In 1861, according to the Report of the Royal Commission, the rate was 16 per thousand. During the eight years ending with 1853–54 it was 21 per thousand. During the same period the average annual ratio of admissions to strength was 1,323 per thousand. These figures are taken from Dr. Hugh Macpherson's valuable tables.* The same diseases cause the greatest amount of sickness among both officers and men.

22. The average annual rate of mortality among the wives of soldiers in India was estimated by the Royal Commission at 35 per thousand. We fear that for the Bengal Presidency this estimate is too favourable. During the four years ending 1853–54, the average annual rate of mortality among the women of this class was 44·5 per thousand, and the ratio of admissions to strength was 1,268 per thousand.† It is shown by Dr. Bryden's tables in the Appendix, that for the four years ending with 1863 the average rate of mortality among the women was 49·6 per thousand. Rate of mortality among soldiers' wives.

23. The mortality among the children of European soldiers has been still more lamentable: for the four years ending with 1853–54, the average annual rate of mortality was 84·1 per thousand;‡ for the four years ending 1863, it was 90·4 per thousand.§ Further reference to this excessive mortality has been made in para. 37 of this Report. Rate of mortality among soldiers' children.

24. The following Table shows the comparative mortality among the men, women, and children of the European Army from the principal diseases for the four years ending with 1863:— Comparative mortality among men, women and children.

TABLE XII.

DISEASE.	Died in Hospital, per Thousand of Average Strength.		
	Men.	Women.	Children.
Cholera	11·5	17·4	16·4
Small-pox	·4	·8	·7
Fevers	3·9	5·3	10·7
Dysentery and diarrhœa	4·3	9·6	21·7
Diseases of the liver	2·8	1·9	·3
Respiratory diseases	·9	1·8	3·4
Phthisis pulmonalis	1·7	3·8	·3
All Causes	30·3	49·6	90·4

25. The returns of mortality and sickness among the native troops may be carefully compared with those for the Europeans. Mortality and sickness among native troops.

According to the Report of the Royal Commission, the average annual rate of mortality among the native troops has been under 20 per thousand.

The

* Analysis of the later Medical Returns of European Troops serving in the Bengal Presidency.
† Dr. H. Macpherson's Tables. ‡ *Ibid.* § See Table in Appendix.

The rates of admissions and mortality from all causes among the native troops during the last four years have been as follows :—

TABLE XIII.

YEAR.	Average Strength.	Ratio per Thousand of Average Strength.				
		Daily Sick.	Admitted.	Died in Hospital.	Died out of Hospital and on Leave.	Died from all Causes.
1861 - - -	39,797	40·1	1,169	16·8	3·5	20·3
1862 - - -	35,922	44·8	1,385	14·0	3·2	17·2
1863 - - -	37,459	46·2	1,477	14·6	5·1	19·7
1864 - - -	37,225	43·0	1,389	12·7	·4	13·1

Sickness and mortality among native troops in the various provinces of the Bengal Presidency.

26. The following table shows the amount of sickness and mortality among the native troops in the several provinces of the Bengal Presidency for the year 1864. It may be compared with the preceding tables, which give similar details for the European troops :—

TABLE XIV.

PROVINCE.	Average Strength.	Ratio per Thousand of Average Strength.					
		Daily Sick.	Admitted.	Died in Hospital.	Died out of Hospital.	Died from all Causes.	Died from Cholera.
Bengal Proper - -	7,929	47·0	1,513	20·3	·5	20·8	6·4
Dinapore, Benares, Oudh, and Cawnpore.	6,945	32·7	975	8·9	·3	9·2	1·2
Meerut and Rohilkhund -	4,388	40·8	1,227	10·5	·7	11·2	—
Agra and Central India -	4,984	43·5	1,230	6·4	·4	6·8	—
Punjab - - - - -	10,504	46·5	1,679	11·1	·3	11·4	0·9
Troops on the march, &c. -	—	—	—	—	—	—	—
TOTAL Bengal Presidency	37,225	43·0	1,389	12·7	·4	13·1	1·7

Great difference in amount of disease in different provinces.

27. It is impossible to look at these tables, or, still more, at the detailed returns from which they have been compiled, and which are given in the Appendix to this Report, without observing the great differences in the rates of sickness and mortality in different provinces of India. The remarks that have been made above (para. 4) regarding the caution with which conclusions must be based on arithmetical averages, are peculiarly applicable here. Under the name India, are included many different countries of great extent, varying among themselves in climate, and in all physical conditions as much as the different countries of Europe vary from one another. It is further from Calcutta to Lahore than from London to Naples, and the difference between the two climates is as great in the former case as in the latter. If we strike an average between the rates of mortality in the French Army in Paris, and in Rome, or between the rates in the English Army in London and Malta, the arithmetical result will be of little use as an illustration of the sanitary condition of the troops, and general averages for India have a hardly greater value.

Diseases most fatal to Europeans and natives.

28. It will be seen that the same diseases, with a few exceptions, caused the chief mortality among both Europeans and natives, nor, with these exceptions, were the differences in the rates of mortality very great, but heat apoplexy, delirium tremens, hepatitis, and phthisis pulmonalis, were almost confined to the Europeans. Among them, 6·5 per thousand died from these four diseases, while among the natives, only 0·7 per thousand died from the same causes. These diseases account for the greater part of the difference between the rates of mortality of the two classes of men.

The

The admissions into hospital on account of fevers and dysentery were more numerous among the natives than among the Europeans. The most striking difference of all is seen in venereal diseases, for which 255 per thousand of Europeans were admitted, and only 49 per thousand of natives.

29. These results are generally in accordance with those observed in former years. The following Table shows the average rates of mortality from the principal diseases among the European soldiers in this Presidency for four years, and among the native soldiers for three years, both periods ending with 1863. The figures in respect of Cholera are not properly comparable, because the period included the great epidemic of 1861, which was so extraordinarily fatal to the European troops at a few stations:— Comparative mortality among European and native troops.

TABLE XV.

DISEASE.	Died in Hospital per Thousand of Average Strength.	
	Europeans.	Natives.
Cholera - - - - - -	11·5	2·8
Shall Pox - - - - -	·4	·3
Fevers - - - - - -	3·9	4·1
Dysentery and Diarrhœa - -	4·3	2·9
Diseases of the Liver - - -	2·8	·2
Respiratory Diseases - - -	·9	1·5
Phthisis Pulmonalis - - -	1·7	·5
All Causes - - -	30·3	15·2

During the same periods the admissions for venereal diseases were 312 per thousand among Europeans, and 58 per thousand among natives.

30. We have not the means of making a proper comparison between the amount of sickness and mortality at different seasons of the year among the European and native troops respectively. There is, however, reason to believe that the cold season which is so healthy for Europeans is the most fatal to natives.* This appears to be shown also by the returns of sickness and mortality in goals. The result is in accordance with what has been observed in other countries, and is especially interesting as illustrating the importance of purely climatic influences upon different constitutions independently of local sanitary conditions. The following Table gives the means of comparison for the year 1864 only:— Comparative amount of disease among European and native troops in the hot and cold seasons.

TABLE XVI.

	Ratio per Thousand of Average Strength.					
	December.	January.	February.	July.	August.	September.
Daily sick, Europeans -	48·7	49·9	56·3	63·3	66·9	71·8
Ditto - Natives -	46·2	43·2	41·2	35·3	39·5	50·1
Admitted, Europeans -	104	100	100	138	170	148
Ditto - Natives -	113	93	84	93	132	140
Died, Europeans -	2·4	·9	1·0	2·0	2·0	3·1
Ditto, Natives - -	1·5	1·0	1·2	·7	·9	6

* See paras. 15 and 16, and Tables VI. and VII., showing comparative amount of disease among the European troops in the hot and cold seasons.

Sickness and mortality among European and native troops in 1864.

31. The following Table shows the admissions and deaths from the principal diseases during the year 1864 for both European and native troops:—

TABLE XVII.

DISEASE.	Ratio per Thousand of Average Strength.			
	Europeans. Average Strength, 40,385.		Natives, Average Strength, 37,225.	
	Admitted.	Died.	Admitted.	Died.
Cholera	3	2·4	4	1·7
Small Pox	2	·4	1	·3
Fevers	542	3·1	693	3·8
Heat Apoplexy	2	1·5	3	·1
Delirium Tremens	4	·4	·1	—
Dysentery	36	1·6	74	1·1
Diarrhœa	98	·7	64	1·1
Hepatitis	56	3·0	2	·1
Respiratory Diseases	80	1·0	37	1·8
Phthisis Pulmonalis	8	1·6	·9	·5
Rheumatism	84	-	57	—
Venereal Diseases	255	-	49	—
Eye Diseases	43	-	26	—
All Causes	1,641	21·0	1,389	13·1

Probable permanency of diminution of mortality in the army in India.
Evasion of epidemic disease.

32. It is an important question how far this great diminution of sickness and mortality in the Army in India is likely to be permanent. Believing as we do that this has undoubtedly been brought about by the improvement in the condition of the soldiers, we look forward with confidence to still further progress as the consequence of the constant efforts that are being made. But however much may be done to counteract the unfavourable climatic and other conditions to which Europeans are exposed in India in ordinary times, there are years of epidemic constitution recurring at frequent but undefined intervals, when the best sanitary arrangements within our cantonments are almost powerless. The unfavourable conditions which exist at such seasons will probably ever remain, in a great measure, beyond the power of man to control.

Fortunately, however, even in years of epidemic constitution, the prevalence of disease is often confined within limited areas at a time, and it is on the recognition of this fact that bodies of troops may be preserved from pestilence and death, by promptly moving them away from places which have become affected with the prevalent disease. The utility of this method of evading epidemic sickness has been proved, to the most complete demonstration, in the case of cholera, and it was fully acknowledged by the Government in giving sanction to the recommendations of the Cholera Commission. We believe that the principle is capable of a wider application, and that it may be so extended as to include all the more serious diseases prevailing epidemically and endemically. It is probable that this may be found to be the only simple and practicable means of obviating the recurrence, at short intervals, of years of comparatively high death-rate from extraordinary causes, after good sanitary arrangements have counteracted successfully the ordinary causes of disease. We have noticed in a separate report that this system of evading disease will be greatly facilitated by the extension of railways, and by the provision of military rest-houses at convenient stations along the lines.

Measures for the prevention of cholera.

33. Among all the causes which may render us apprehensive regarding the permanency of the improvement that has taken place in the rate of mortality in the army in India, the most important is cholera. If we can guard against the terrible epidemics of this disease which have so often attacked our troops, we need, perhaps, hardly fear that there will be, in time of peace, any serious or continued increase to the rate of mortality which now prevails. But it is visionary to suppose that any amount of ordinary sanitary improvements, such as we are likely to see carried out, will have the effect of preventing the liability to cholera, in a country like this, where the disease is always present, and in some

some part of which it is almost always virulent. The system of evading disease of which we have just been speaking, has been fully applied in the case of cholera.

One of the most important measures taken during the past year was the promulgation by the Government of the rules proposed by the Commission appointed to inquire into the Cholera Epidemic of 1861, with the object of preventing the spread of cholera among the European troops. These rules prescribe, in great detail, the measures of precaution and prevention which are invariably to be adopted when epidemic cholera is prevalent, or when its attack is apprehended. With a few slight modifications, recommended by the Sanitary Commission for Bengal, the rules have been sanctioned by the Government, and their strict observance has been ordered.

There is no subject connected with the health of the Army in India which is of more essential importance than this, and it is desirable that we should briefly state here the general character of the measures that have been taken. The average mortality in the Army in India from cholera alone, during the last 50 years, has been higher than that which now prevails in the Army in England from all causes put together, and not less than a sixth part of the whole number of deaths during that period has been due to this disease. Very frequently, the prevalence of cholera has been most excessive and most alarming. We have already noticed its terrible virulence in 1861, especially at Meean Meer and Morar. It would be difficult, as the Report of the Cholera Commission truly states, to find a parallel to the mortality at Meean Meer, at least in modern times and among civilized men.

The Cholera Commission arrived at the conclusion that "whenever an excessive mortality from cholera had occurred among the soldiers, it was obviously due to causes which might have been avoided,—either to positive mismanagement, or to the neglect of precautions which it was easy to adopt." "There is a common impression," says the Commission, "that there is something essentially strange and mysterious in all that concerns this disease, and that it is almost hopeless to attempt to lay down any principles of any kind regarding it. There can be no greater mistake. There is, perhaps, no disease which has more strongly marked and invariable characteristics, which regularly present themselves during every epidemic attack, and it is this fact which gives room for hope that means may be found for its prevention. It is only when we come to the purely medical part of the question that we must admit that we at present know almost nothing." The recommendations of the Cholera Commission are founded upon the principle that the observation of facts is the sole basis of physical knowledge, that the facts which characterise an epidemic of cholera are remarkably uniform and obvious, and that in this uniformity of character we have a sound basis for measures for the prevention of the disease.

The rules laid down by the Cholera Commission start with the assumption that no general measures of sanitary improvement, although these, too, are essentially necessary, will alone enable us to contend successfully with cholera, but that special measures are also required, based upon the belief that the cause of cholera is a specific poison, propagated according to certain special laws.

Of all the characteristics of the disease, the most constant and important, so far as our present objects are concerned, is this, that cholera is evidently a disease which attaches itself to particular localities. "Although an epidemic may be diffused over a vast extent of country, the local distribution of the disease is always most partial and unequal. Among a number of places near one another, and apparently placed under altogether similar circumstances, some escape and others are attacked. One part of a town is ravaged by the disease, while other parts are untouched by it. "In a few houses in a street," writes Dr. Baly, "half the inhabitants are carried off by the disease; in the remainder not a single death occurs." * * We have here a rational basis for practical measures for mitigating the violence of an epidemic of cholera. If we find that in some particular place there is evidently present a special cause which is fatal to the persons exposed to it, the obviously reasonable plan is, if possible, to avoid the place altogether. Nor is this only a matter of theory. It has constantly been found in practice that the result of removal, even to a very

short distance from the infected locality, is sufficient to cause the total cessation of the disease."*

The rules of the Cholera Commission provide, accordingly, for the instant removal of the troops from the place in which cholera has appeared, and for stopping all communication with the infected locality until it may safely be believed that all danger has ceased. It is assumed that cholera is communicable by human intercourse; the Commission, while it avoids the discussion of any theory, evidently leans to the belief that the disease is disseminated by the discharges from cholera patients, and many of the rules are framed to meet this presumed danger. The necessity of carrying out a most vigilant inspection of the men during the prevalence of cholera is strongly insisted upon, with the object of ensuring the discovery and treatment of the disease in its earliest stage. The main object during an epidemic of cholera is the prevention of fresh cases of the disease in its virulent form. Prevention is often possible, but medical treatment has little value after the disease has become fully developed. On all these points, and on many others more or less connected with them, rules have been laid down in great detail. We cannot as yet judge fully of their practical effect, but we have every right to hope that they will gain the end at which they aim. They are, in all essential respects, only a further development of the rules which were laid down in the General Order issued by his Excellency the Commander-in-Chief on the 7th April 1862, and which have undoubtedly proved most successful in checking the progress of the disease among the troops. To watch the operation of these rules, and to learn by experience the points in which they are defective, is now one of the most important duties of medical and sanitary officers in India. The Cholera Commission declared its belief that if proper measures of prevention were adopted, mortality such as that which occurred in 1861 at Meean Meer would be hardly possible in future. We see no reason why this opinion should be considered too sanguine.

Increase of mortality from cholera.

34. Although we hope that the total mortality from cholera may in future be reduced, we fear that there is little room at present for anticipating any greater measure of success in the treatment of the disease. The Report of the Cholera Commission shows that there is, unhappily, great reason for believing that the proportion of deaths from cholera to cases treated has gone on for many years steadily increasing among the European troops in all parts of India. The per-centage rose in Bengal between 1818 and 1854, from 26·7 to 42·0; in Bombay, during the same period, from 18·5 to 43·2; and in Madras, between 1829 and 1851, from 27·1 to 62·3.†

In the Bengal Presidency, since 1854, the per-centage of deaths to cases treated among the European troops has been as follows:—

1854–55	50·5	1860	53·3
1855–56	50·0	1861	64·1
1856–57	53·6	1862	61·3
1858	54·3	1863	75·1
1859	50·2	1864	72·6

The per-centage of deaths to cases of cholera treated has been far greater among the European soldiers than among the Native troops or Native prisoners in gaols. According to the Report of the Cholera Commission, the rate among the Native troops between 1826 and 1861 was generally from about 30 to 40 per cent. In the epidemic of 1861, among all classes of Europeans, the per-centage of deaths to cases was 63·8, while among the Native troops it was 38·2, and among the prisoners in gaols it was 47·9.‡ Since 1861 the rates have been as follows:—

Year.	Native Troops.	Prisoners.
1862	50·3	36·4
1863	57·0	36·5
1864	44·0	36·6

We

* Report of Cholera Commission, Section II., para. 431.
† Report of Cholera Commission, p. 249.
‡ Report of Cholera Commission, p. 250.

We can say nothing which would throw any additional light on these lamentable facts. They serve to illustrate strongly the truth of the principle constantly insisted upon by the Cholera Commission, and noticed above, that during an epidemic of cholera among European soldiers, the main object ought always to be the prevention of fresh cases, rather than the medical treatment of those who have been attacked; that medical treatment is ordinarily almost useless after virulent symptoms have appeared; and that the difficulty of affording medical treatment to patients suffering from cholora ought never to be admitted as a reason for omitting to carry out precautionary measures. This last point is one of much practical importance. The disinclination to subdivide hospital establishments during the prevalence of cholera has frequently prevented the proper separation of the troops into different detachments, and has led to the exposure of the men to a positive danger for the sake of giving them an advantage which is for the most part imaginary. So long as it remains true of our regimental hospitals that nearly three-fourths of those attacked by cholera die, medical treatment must be looked upon as a matter of quite secondary importance. There is no reason whatever for supposing that the rate of mortality is higher than this when European medical treatment is altogether wanting.

Measures for prevention of venereal diseases.

35. Measures for the prevention of cholera are hardly more necessary than measures for the prevention of venereal diseases. It has been noticed in another part of this Report that Act 22 of 1864 has given power to the Government to make rules and regulations for inspecting and controlling houses of ill-fame in military cantonments, and for preventing the spread of venereal diseases. The Act also provides* that the Governor General in Council, whenever it shall appear necessary for the protection of the health of the troops, may extend to any place outside the limits of any cantonment, and in its vicinity, all or any of the rules or regulations made within the cantonment for the purposes just stated, or may make any additional rules and regulations that are required.

We have shown, in a separate report, that at least one-third of the whole Army has ordinarily passed through the hospitals in the course of the year on account of these diseases alone. At many stations the proportion has been much higher, amounting to 50, 60, and even 70 per cent. of the force. It may be assumed on any day in the year that a number of men equal to the ordinary effective strength of a regiment are disabled from this cause. Statements such as this give, however, no sufficient representation of the real evil. The highest authorities agree in declaring that these diseases are the origin of a very large proportion of the invaliding which occurs every year, and that the mortality from other diseases is seriously aggravated by them. Dr. Duncan Macpherson, Inspector General of Hospitals, who has made the subject a matter of special study, declares his conviction that "fully two-thirds of those who imbibe the disease are invalided within five years, and are sent out of the service with a loathsome poison circulating in their veins which passes down to their posterity." It is, as this Commission has already declared, little better than folly to talk of measures for improving the health of the Army, and to ignore the existence of causes of disease which every body knows and admits to be more important than almost any others which exist. That preventive measures may be adopted which will have the effect of diminishing to a very great extent these frightful evils, is a fact completely proved by experience both in Europe and in India, and the Government has now the power of dealing effectually with the whole subject. We had hoped that before this time greater progress than we are able actually to report would have been made towards the introduction of an efficient system of prevention. Unforeseen delays have interfered in carrying out the plans which have been recommended, but we confidently hope that during the present year measures will be taken which will produce most important and beneficial results.

The plans that it is proposed to adopt will be in accordance with the recommendations of the Royal Commission, and with the orders of the Secretary of State. It is satisfactory to know that similar measures for the protection of the

* Section XXV.

the Army and Navy at home were authorised by Parliament in the last Session, by the "Contagious Diseases Prevention Act" (26 & 27 Vict. c. 85).

Diminution in venereal disease.

36. There has already been some diminution in these diseases, although they are still lamentably common. The following Table shows that they were less prevalent among the European troops during 1864, than in any previous year since the mutinies :—

TABLE XVIII.

YEARS.	Average Strength.	Number of Admissions from Venereal Diseases.	Admitted for Venereal Diseases per Thousand of Average Strength.
1858	43,771	11,446	261·1
1859	55,104	19,777	359·0
1860	48,901	16,478	338·0
1861	44,879	16,567	369·1
1862	42,980	13,671	318·1
1863	41,351	11,650	281·7
1864	40,385	10,295	254·9

Measures recommended by Mr. Acton.

37. As one means of diminishing the liability to this class of diseases, the Royal Commission recommended in its Report that additional measures of cleanliness, such as have been proposed by Mr. Acton, should be provided in barrack lavatories. This recommendation has been carried into effect during the past year. Private bathing-rooms with a supply of water have been already provided in addition to the ordinary means for bathing and washing to the extent of about four per company, and in new buildings this provision will be further increased.

Restrictions upon marriage. Difficulty of rearing European children in India.

38. It has often been said that one great cause of the extreme prevalence of these diseases is the restriction placed upon marriage. This, however, can hardly be the case in India, for the number of married men is, at the present time, less than half of the number authorised under the existing regulations, viz., 12 per cent. On the 1st May 1863, out of 66,748 rank and file in the three Presidencies, only 3,776 were married. This is certainly not the result of any adverse pressure put upon the men. Although the wives and children of soldiers in India have to suffer many hardships, the quarters provided for them are usually much better in India than in England or in the Colonies, and greater efforts have been made by the Government to improve their condition. There can be no doubt that in the Army generally, there is no strong inclination to marriage. It may, we think, be doubted whether this is to be regretted. Putting aside other considerations, which might lead us to the same conclusion, the rate of mortality among soldiers' children in India is so excessively high, that we may well hesitate in coming to the conclusion that marriage in the army is a thing to be generally desired. For the four years ending with 1863, the average annual death rate among the children of the European soldiers in this Presidency was no less than 90 per thousand.* We have no exact statistics to show the age of these children, but we may safely consider that the mortality was, on a very moderate calculation, four or five times greater than among children of similar ages in England. Although this lamentably high rate may doubtless be diminished, we fear that there is little probability that it will fall to anything like a European standard. It is only by the extremest care, and with the help of all the advantages of superior intelligence and wealth, that the children of European parents belonging to the higher classes of society can be reared in the plains of India, and even of these, it is probable that few would reach a healthy maturity if they were not sent at an early age to Europe or to the Hills. "One of the chief impediments," writes Dr. Chevers, one of the highest living authorities upon the subject, "to the colonization of India by Europeans, is the almost absolute impossibility of raising healthy children in the plains.

* *See* para. 22.

plains. * * So long ago as the year 1835, Dr. Twining, of Calcutta, published the question, 'Does the third generation of the European race exist in India, all the individuals being of pure European descent, and having been born and reared in this country?'. This plain question has been known, probably, to every medical man throughout India for nine and twenty years. Many medical officers long engaged with European troops and attached to invalid depôts, have, to our knowledge, been greatly interested in its investigation, but in no single instance has it ever been answered in the affirmative."* Until the Government undertakes (and we must confess that such a supposition seems to us altogether visionary) to send all the children of European soldiers to England or to the Hills, when they reach the age of five or six years, and then to make arrangements for their education and support, it appears, to say the least, very questionable whether marriage in the army ought to be encouraged. It may even be doubted, as Dr. Chevers has shown, notwithstanding the success of those truly admirable and most useful institutions, the Lawrence Asylums in the hills, whether the children of English soldiers can be brought up in full mental and bodily vigour in the climate of any of our Indian sanitaria; and even if this question be decided in the affirmative, it must be remembered that this can only be done at a cost for which, as Dr. Chevers says, gentlemen's children could be brought up, and educated for professions in Europe.†

Hill Sanitaria for European troops.

39. The question of the manner in which the advantages of hill climates can best be extended to the European troops has been the subject of much discussion during the past year, and the Sanatary Commission has submitted to the Government a report containing a fnll statement of its views upon this important subject. The principal conclusion of the Commission with regard to Himalayan Sanitaria, may properly be stated here; whether hereafter they be in all cases admitted to be correct or not, they will show the points that have to be decided, and the present state of the question. We consider—

1st. That no climates in India have been more completely tested by actual experience than those of the Himalayan Sanitaria; and that their great value to the European troops, if judicious use be made of them, is certain.

2d. That the most suitable elevation above the sea for Himalayan sanitaria for European troops is ordinarily about 6,000 feet above the sea; that no sanitaria should ordinarily be below 5,000 feet, or higher than 7,500 feet above the sea.

3d. That all make-shift arrangements for housing troops in the hills are objectionable, and that good barracks and good sanitary arrangements are as necessary in the hills as in the plains.

4th. That in the practically accessible parts of the Himalaya, in Northern India, elevation above the sea is the only important cause of variation of climate, and that the outer ranges are as suitable for sanitaria as the ranges more distant from the plains.

5th. That it is essential that hill sanataria should be as near to the plains and as easily accessible as possible; that those parts of the mountains are objectionable which are separated from the inhabited portion of the plains by unusually wide and unhealthy tracts of forest and terai, or by the Siwalik hills and doons; and that the most suitable situations for sanitaria for the troops are those where the higher ranges rise immediately out of the plains.

6th. That in choosing the actual site for sanitaria, no general or necessary connection can be assumed to exist between geological structure and liability to disease; that all sanitaria should possess an ample supply of good water, level ground, sufficiency of wood, and southern aspect; and that the requisite for a good sanitarium can seldom be obtained except in the vicinity of ranges of greater elevation than that which is required for the sanitarium itself.

7th. That it has been proved by experience that the influence of hill climates upon European constitutions is preservative against disease rather than curative; that to obtain the greatest amount of advantage, the men who are sent to the hills should in all cases be selected, in preference to sending whole regiments, and that no general removal of sick men to the hills is proper.

8th. That it must be assumed, on military and political grounds, that no very large

* "Can India be colonized by Europeans?" Re-printed from the "Calcutta Review" for April 1864.

† The cost of the Lawrence Military Asylum at Sunawur, in the Himalaya, containing about 400 boys and girls, was, in the year 1864, nearly 16,000 *l.*, or 40 *l.* for each child.

large proportion of the army can be placed in the hills; and that the only portion of the army that can be stationed in the hills is that which may be looked upon as a reserve to be drawn upon in emergencies, over and above the force which is ordinarily necessary for the military occupation of the country; that after reducing, as far as possible, the number of unhealthy stations in the plains, a sufficient number of hill stations should be provided, to which such portion of the troops as can be spared from duty in the plains should be sent in rotation, and that all stations in the plains within practicable distance from the hills should have their hill sanitarium, to which a portion of each regiment should be sent.

9th. That for the present it might be assumed that 20 per cent. of the European soldiers may with advantage be stationed in the hills, and that hill sanitaria might be at once formed on this assumption, similar arrangements being also made for the women and children.

10th. That there is no advantage in multiplying the number of sanitaria, but that, as far as possible, they should be concentrated in a few healthy and convenient situations in the vicinity of existing stations.

Amount of invaliding.

40. The following figures show the number of men per thousand of average strength invalided during the last seven years. Details showing the causes of invaliding will be found in the Appendix:

Year.	Invalided per Thousand.
1858	43·6
1859	33·9*
1860	
1861	28·1
1862	31·5
1863	35·0
1864	36·8

It will be seen that there has been an apparent increase in the rate of invaliding. We are not now able to draw any positive conclusions from these figures. Although the number invalided has increased, it does not follow that the amount of disease has increased also. With the increase of consideration for the soldier, and of anxiety to preserve him against all avoidable causes of disease, there is an increased disinclination to keep him in a climate which is unfavourable to him. The greater facilities for conveying men from the interior to the port of embarkation and thence home have probably had a similar effect.

Provision for passing invalids, and shipment home.

41. The seventh recommendation made in the Report of the Royal Commission is, "that provision be made for passing invalids at the port of embarkation without delay, and for their immediate shipment home."

Great changes and improvements having been made in respect of this matter since the inquiries of the Royal Commission, we think it desirable to show clearly the practice which now prevails. This is explained in the following memorandum by Dr. C. A. Gordon, one of the members of our Commission, who, from his position as Deputy Inspector General of Hospitals in Calcutta, has had the best opportunities of becoming acquainted with the present system:—

"In the evidence given before the Royal Commission to inquire into the sanitary state of the army in India, it is stated that great laxity of discipline and drinking prevails among troops coming down the river from the Provinces to Calcutta; that the landing of the old soldier at Calcutta, like that of the young recruit, has often been most destructive; that invalids used to land at Fort William, and would come in great numbers into the General Hospital there, with no additional illness than that which was caused by drunkenness; that, as a rule, the decision of the up-country Boards should be final, and that the use of the final Board was not apparent.

"At the time to which the witness examined before the Royal Commission referred, the invalids from the provinces had few of the advantages they have enjoyed of late years. Formerly

* Average of two years.

Formerly they were brought down country in the native-made boats, these being nightly moored near some village from which it was easy to obtain deleterious liquors, such as the Indian soldier of those days was prone to indulge in; and on their arrival at Fort William they were accommodated in low ill-ventilated casemates, the counterpart of which are now used as store rooms, the very rooms themselves being occupied by the men of a native regiment. With other improvements recently extended to the army in India, however, has come within the last few years a very important one in the arrangements regarding the conveyance of invalids to Calcutta, and in their accommodation while there.

"The native kind of boat has since 1857 been abandoned for the steamer and comfortable troop boat attached to it, the last body of invalids brought down by country boats having arrived at Chinsurah from Gurmucktesur Ghât on 27th February 1857. Still more recently, full advantage has been taken of the railway: arrangements being made at suitable distances along the line for the accommodation and due rest of the men *en route* from the more distant stations. The casemate barracks formerly used have, since August, 1861, been abandoned for the purpose, and the men are now accommodated in an airy and well raised double storied barrack in Fort William, freely exposed to the prevailing winds.

"In 1857 a depôt was established at Allahabad for the purpose of accommodating sick and wounded, and whence they could from time to time be dispatched by steamers and troop boats to Calcutta.* Still more recently, however, rail communication having taken the place of river conveyance, men arriving at Allahabad have been dispatched in that way, arriving at Calcutta in smaller numbers at a time than they formerly did. Accordingly the depôt was broken up in 1864, in accordance with Military Department letter, dated Simla, 28th April 1864, to the Adjutant General, No. 278 E.

"In 1863, orders were issued abolishing the final invaliding committees that had up till then met annually at Calcutta and Mooltan, and in their stead establishing divisional Boards to be presided over by a deputy inspector general, the decision of these being final. G. O. C. C.; 20th August 1863.

"Since these orders were brought into effect, the invalids at Fort William and the stations immediately around Calcutta, namely, Chinsurah, Dum-Dum, Barrackpore, and Berhampore, are brought to Calcutta for this purpose. Those at other stations are brought before local Boards, and are sent to Calcutta with their documents as nearly ready as possible, to await embarkation.

"The results of the new system, as compared with that which it superseded, are apparent from the following comparison:—In the invaliding season of 1862 there were in all 1,388 men brought before the invaliding Board, of which the writer of this memorandum was president, and of these, no fewer than 200 had to be remanded from time to time for further observation before the committee was in a position to dispose finally of their cases. In 1863, on the abolition of the final invaliding committee, the number of men brought before the Board at Calcutta was 111, of whom eight were remanded. It deserves to be mentioned that even this number, comparatively small as it was, was increased by the fact that the 43d Regiment having been ordered to New Zealand, it became necessary to select from it all menwho did not appear fit for active service. In 1864 the number brought forward was 71, of whom only two were remanded.

"Invaliding Boards at the different stations are now held as early as possible after September, so that men who are recommended by them to be sent home may, in accordance with general orders, reach Calcutta on or before the 1st of January; and, with a view to prevent troops being sent to Calcutta during the more unhealthy months, strict orders have been issued by the military authorities to the effect that soldiers, whether as transfers or for embarkation to England or the Colonies, are not to be sent to ports of embarkation between the 1st of April and 30th of September, except in special cases. G. O., H. M. B. F., 12th March 1860, and 2d October 1860. Adjutant General's Circular, 116-E, 9th September 1864.

"A Circular Memorandum from the Quarter Master General, a copy of which is attached to this memorandum, directed such arrangements to be made in 1864 as much facilitated the dispatch of troops from and to the Upper Provinces, and rendered the journey as little harrassing to themselves as was practicable. No. 97-*General*, dated Simla, 28th September 1864.

"Synthea, the nearest point to Calcutta, at which a camp, such as is ordered in that circular, was formed, is situated at a distance of only 119 miles from Calcutta, so that invalids were readily dispatched from it to Fort William, as detachments vacated the barracks there, and proceeded on their voyage to England. By means of the telegraph, information was readily obtained from Allahabad as well as Synthea, regarding the numbers of men actually at these places respectively, and thus, preliminary arrangements could be made in respect to shipping, the precise numbers to be accommodated being decided on their arrival at Calcutta.

"That the detention of invalids at the port of embarkation is an evil, there can be no question, and that it is especially so at Calcutta is self-evident. Men so detained are there accommodated in a fort, the very nature of which demands that its occupants be healthy and effective men: incentives to crime and opportunities of committing irregularities are abundant; and in the bazaars of the neighbouring city disease of a communicable nature, to which men newly arrived are particularly liable, is ever rife.

"There

* No. 1250, to Assistant Adjutant General H. M.'s Forces, from Deputy Secretary to Government of India, in the Military Department, dated the 30th October 1857, establishing convalescent and depôt hospital at Allahabad.

"There are some circumstances, however, which, so long as they continue as at present must operate more or less powerfully against the complete removal of the present necessity for detaining men at Calcutta for a short time previous to embarking.

"A few of the more important of these are enumerated:—Thus, the system has hitherto been that the committee for the purpose of invaliding soldiers for England assemble once a year, namely, as soon as practicable after September. In this way the entire wreck, so to speak, of the previous twelve months, comes to be disposed of within the short period embraced by the cold season. It is true that supplementary committees were assembled in the Presidency and Benares divisions at the end of the cold season of 1864–65, and several men thus sent home, who would otherwise have increased the numbers of those to be brought forward in the succeeding year. Doubtless similar committees will in future be permitted to assemble at the more distant stations between which and Calcutta communication by rail is now easy; but up to the present time the plan here alluded to has not been generally adopted.

"It is necessary that the accounts of invalids as well as other men be adjusted and settled prior to their being dispatched to England, and that claims raised by them be investigated. Reference to their regiments is thus often necessary, requiring the temporary detention of individuals unless they are willing to leave the adjustment entirely to the officers concerned. Military documents are, it is stated, sometimes received in an incomplete condition; and in all cases the officer in charge of the depôt has to see that the kit of each man is complete prior to embarkation.

"Shipping is finally taken up for the precise number of men, their wives and children, borne upon the allotment return sent to the Deputy Quarter Master General by the Commandant of Invalids; it is necessary that the latter allow himself a considerable margin for probable casualties. Thus, it often happens that a man may almost at the last moment prefer a claim that necessitates reference to his regiment; and of course he must be detained in the mean time, unless he be willing to leave its settlement to the officers concerned. A man may die or become too ill to embark, or, as is sometimes the case, he may be placed in confinement for some crime committed, and not be available or in a fit state to embark. In either case the man may have a wife and children of particular ages, so that the precise equivalent of these must be held available for substitution, if necessary, up to the time of embarkation, as payment is made to the owners for the numbers borne upon the return on which the ship has been originally chartered.

"When practicable, those men who are most seriously ill are dispatched with least delay, when their condition is not so extreme as to render their embarkation inadvisable. As a rule, however, men are put on board ship nearly in the order of their arrival at Calcutta.

"In accordance with the system still in use of taking up shipping for the troops, the routine adopted in regard to this matter is as nearly as possible the following:—The Quarter Master General's Department having obtained information that a certain number of men are in waiting for transport, the marine authorities invite 'Offers to be made by the agents or owners of vessels,' and the terms being so far arranged for conveyance and feeding, the vessel is surveyed as to her sea-worthiness,

"The preliminary survey next takes place, during which special arrangements in regard to the convenience of the troops are seen to; namely, ventilation, fittings, means for cooking, and arrangements generally; the officers upon whom this duty falls being one of the Quarter Master General's Department, the principal medical officer at the port, and an officer of the Marine Department who acts as agent for transports. Meantime the Adjutant General's Department publishes the names of officers, military and medical, appointed to take charge of the troops proceeding by the ship.

"The owners obtain from a contractor provisions and water, and arrangements are made for the precise numbers and designations of persons borne upon the Allotment Return. At the same time the Commissariat and Medical Store Departments, respectively, prepare medical comforts, medicines, and instruments, in accordance with a scale laid down for their guidance.

"The next proceeding is that the ship's stores are surveyed as to their quality and quantity. The committee appointed for this purpose consists of the officers already mentioned; but, in addition to these, the officers appointed to the military and medical charges respectively are included, a few of the non-commissioned officers and soldiers about to proceed by the vessel being also on board to see the various articles provided for the voyage.

"The embarkation usually takes place in two or three days after this final survey. The morning is selected for it. Cooks either proceed on board at a very early hour, or, what is still better, are embarked the previous evening, so that the men's breakfast may be served up with the least possible delay; and whenever the state of tide permits, the vessel drops down the river and proceeds on her voyage.

"Not only does the departure from Calcutta of invalids and time-expired men depend upon the convenience and interest of private shipowners, but with railway communication; as it at present exists, troops are only brought down in small parties at a time, so that several days are sometimes required to enable a number such as is usually put on board one ship to accumlate.

"In suggesting means for still further facilitating the transport of troops from inland stations to Calcutta, or *vice versâ*, and of the speedy embarkation of invalids for England, is it necessary to assume—

"1st. That the line of transports now in progress be established upon the footing of the

the ordinary Admiralty transports provisioned by the Victualling Department, and in fact worked precisely as are those in operation between the United Kingdom and the Colonies.

"2d. That the railway communication with the Provinces be so far improved that large bodies of troops may, without interfering with ordinary traffic, be conveyed as necessary by train.

"These improvements having been effected, the condition of India as regards facilities of transport will have become in a measure similar to that of the United Kingdom, save in the great distances to be travelled in the one country as compared to the other.

"It is necessary that we bear in mind the fact that a very large proportion of men who are included as 'invalids' are not really in such an infirm condition as to be unable to attend to their own wants, or to undergo considerable fatigue. Many are men whose period of service for pension is complete, or nearly so; they are passed by Invaliding Boards as worn out. Others are suffering from the effects of injuries which render them unfit for military duty, but are in no way in infirm health. And others, although debilitated by climate and by endemic disease, are nevertheless capable of undergoing a considerable degree of such fatigue as is likely to attend a railway journey. The conclusion arrived at from experience gained at Calcutta during three consecutive seasons is that the proportion of invalids who arrive at the port in a bedridden or helpless condition is about five per cent. With the exception, therefore, of this proportion, it does not appear that any special arrangements are in reality required for the conveyance to Calcutta of invalids beyond those that already exist for troops in health.

"Men so ill, however, as to be unable to undergo the fatigue of such a journey, ought, I think, to be conveyed in railway carriages specially fitted up for them; and in the arrangement of these some useful hints might doubtless be taken from what has recently been found to answer so well in America, where carriages of this nature were during the war freely used, being fitted up for long journeys, with all the appliances of a perfect hospital. In this country, however, a carriage of this nature fitted for the accommodation of eight or ten bed-ridden patients at a time would alone be required.

"At a port such as Calcutta, where large bodies of troops embark and disembark every year, and where men are often found to be in an unfit condition to continue their journey, the existence of a general hospital becomes a matter of necessity. It is contemplated, therefore, that men arriving from the Provinces in a low state of health would be accommodated and attended to here until fit to embark; but with the provisions already made that men in very advanced stages of disease shall not be sent from their regiments or depôts, the number of sick who would require to be retained would be comparatively small.

"The letter by the Quartermaster General already quoted, details the places at which it has been convenient to establish temporary camps for troops travelling from the Upper Provinces and proceeding to them. These are respectively placed at distances of about six hours' journey from each other, so that, when necessary, detachments may rest at each.

"Were a regular transport to arrive at Calcutta, with reinforcements, these would doubtless be dispatched to the Upper Provinces in detachments, being conveyed direct from the ship to the railway. Under ordinary circumstances, there would be no necessity for any being detained at Calcutta, except those found on medical examination to be in infirm health. These would, as a matter of course, be taken to hospital.

"So with troops coming down from inland stations; were their accounts finally settled prior to their departure for Calcutta, and the completeness of their kit seen to, the necessity which at present exists for their temporary delay at the port of embarkation would altogether cease. They might proceed direct on board the transport as they arrive from the railway terminus; the military and medical staff on board taking charge respectively of them there in the same manner as if they were joining a garrison or invalid battalion on shore, for it seems a matter of necessity that on board the transports there be a military officer permanently appointed to command the troops, and a medical officer to take charge.

"It is evident that a depôt, however, must exist somewhere, so that arrangements be made with regard to troops about to leave India, as well as to provide for the requirements of those arriving in the country; and an important point to be considered is, where such a depôt may most conveniently be formed, having in view the requirements of these two classes.

"Allahabad is no less than 630 miles from Calcutta, or about 36 hours' journey by rail. This circumstance is doubtless a material objection against its being made the starting place for troops about to sail from Calcutta, and a rendezvous for those arriving in the country. Yet, when the central position of this station is considered, and the facilities, which are daily increasing, of rapid communication between it and Central as well as North-Western India taken into account; when, too, it is borne in mind that between it and Calcutta there is really no point that seems to be at all adapted for the purpose, and that retention of troops at the latter is with good cause condemned, there seems to be in reality no alternative left.

"A few words, therefore, in regard to what appears to be the best means of conducting the journey between that station and the transport must conclude this section.

"The halting places along the line of railway, detailed in the Quarter master General's letter given in the Appendix, are for all purposes the most conveniena could that be devised. The average period required to pass from one to the other is six, or at the most eight hours.

"The only accommodation that has been provided at these, however, has hitherto been in tents. The Commissariat Department has had an establishment at each for the purpose of supplying provisions to detachments arriving, notice being sent on beforehand of the particular numbers to arrive by specific trains. One of the tents was fitted up as a camp hospital, and a small medical establishment was kept in readiness on the spot, with a view that men taken so ill as not to be able to continue their journey received all attention and requirements. The tents for the troops were provided with bedsteads, but not with bedding, the troops themselves having their own.

"It is considered that, to meet all requirements for the rapid transport of troops now contemplated, little more would be necessary in regard to these halting places than to have one or more buildings erected at each with the usual accessories. Thus, with ordinary organization, every thing necessary for the comfort of the troops would be in readiness for them. Arrangements would be made for the removal of the men from the train to these buildings and for recommencing their journey at the appointed time, while the presence of a suitable medical and hospital establishment at each would in reality add efficiency to economy by rendering it unnecessary to send officers of various grades with small detachments, and by affording all necessary succour and accommodation to the more seriously ill among the troops *en route*.

Page 281, Proceedings for 1864.

"The Sanitary Commission for Bengal has already recommended an alteration in the system of supplying the troops with bedding, by which the necessity will cease for the conveyance from place to place of the large bundles that now are the property of individuals. Instead of these, each man will have his couple of blankets, which can be rolled up in little bulk, and readily available for men during their temporary halts, should the state of the season render this necessary. The bedsteads will be provided with suitable mattrasses, and a reserve stock will be with propriety kept on hand to meet possible emergencies.

"Were these arrangements carried into effect, there is every reason to believe that bodies of troops could, under ordinary circumstances, be moved to or from the port of embarkation not only with facility but with absolute comfort to themselves; while, at the same time, the journey for very sick persons would be reduced to its minimum of inconvenience.

"It would be necessary that a steamer with troop boat attached be held available for conveying from the railway station to the transport, or *vice versâ*, such bodies, together with their baggage, as may arrive; and it seems to be above all things desirable that there should be at Culcutta an officer specially appointed to superintend and direct disembarkation and embarkation, with reference to the transit from or to the vessel, and the arrangements connected with arrival at or departure from the railway station.

"It is true that there exists sanitary objections against the detention in the river of troops on board freight ships, and that heretofore every exertion has been used to have vessels of this description towed rapidly away to sea. It is not contemplated, however, that similar objections would extend to regularly fitted-up transports, as these would not, it is apprehended, be crowded as are the former, while their ventilation and general arrangements would be far superior."

The recommendations contained in the latter part of the foregoing Memorandum have been lately laid before the Government by our commission, with a separate report, in which the whole question of the transport of troops by railway, and the provision of rest-houses at convenient intervals, has been discussed.

The determination which has lately been taken to establish a line of transports for troops between England and India, and to adopt the overland route instead of that by the Cape of Good Hope, will, it may be anticipated, produce hereafter most important and benefical results.

These will be felt in many respects, and not the least of the advantages gained will be the means which will be afforded of removing rapidly to England invalids and men who have suffered from the climate of India.

Barrack accommodation in the Bengal Presidency.

42. It is desirable that we should state generally the nature of the barrack accommodation now provided in this Presidency, and the measures that are in progress for its improvement.

The Report of the Royal Commission gives a very unfavourable idea of Indian barracks. It is stated, "the greater proportion of the force is lodged in barracks in such large numbers per room as to be very injurious to health, many of these rooms being several hundreds of feet in length, and some of them containing from a quarter to half of a regiment each!" *** "The ventilation is generally imperfect; and from the arrangement of doors and windows, men are exposed to hurtful draughts. Many of the rooms are too high, and as a consequence there is much surface overcrowding, both in barracks and hospitals, although with large cubic space. In a number of instances both the space and area per bed are much too small. Barracks and hospitals have frequently no glazed

glazed windows, and only wooden shutters. Both barrack and sick wards often are, as a rule, dark. There are four or even six rows of beds between the opposite doors or windows, increasing greatly the already existing difficulty of ventilation and exposing the inmates to foul air."

The evidence upon which these and many other unfavourable conclusions were based, was given either by officers who had only seen this country at a time when sanitary improvements had been little thought of either in India or at home, or who spoke of the state of things existing immediately after the mutinies of 1857–58, when the country had just passed through one of the greatest convulsions recorded in history. A great European army was suddenly thrown into India with no previous warning, and under circumstances which often made it impossible to give proper consideration to the question of how the necessary accommodation could best be furnished. Barracks and hospitals and other military buildings had suddenly to be provided in the least possible time, with most imperfect means either of obtaining good designs, or of supervising the execution of the works that were undertaken.

The determination of the numerous questions connected with the permanent distribution of the Army was a work of time and of difficulty. It is only during the past year that a decision has been arrived at regarding the manner in which the troops are to be distributed at the various stations in this Presidency. So far as was practicable, the number of men at unhealthy places has been diminished. Some stations must necessarily, for military reasons, be retained, at which, in spite of all precautions, we must expect a considerable amount of sickness; but such places are not numerous, and the bulk of the army will be situated at stations which there is every cause for hoping will prove healthy. So long as these questions remain pending, it was difficult to make final arrangements for supplying the permanent barracks and other military buildings that are required, and the troops have necessarily, up to the present time, been, to a considerable extent, lodged in the barracks that were built in the years immediately following the mutinies.

Imperfect as these often are, there has been constant improvement going on. For several years past there can be no doubt that matters have been far more satisfactory in this respect than the Royal Commission supposed, and their conclusions are little applicable to the present state of things. The existing buildings are, for the most part, altogether inferior to those which, under the arrangements which we are about to notice, will take their place, but in spite of all their faults, we believe that it is true, even at the present time, that there is no country in which the troops are, upon the whole, housed so well as they already are on this side of India.

We think it desirable to quote *in extenso* the following Despatch from the Government of India to the Secretary of State, written in July 1859. It gives a clear account of the measures taken, under circumstances of great difficulty, to provide proper accommodation for the troops, and shows the great interest which for many years past has been taken by the Government of India in improving the condition of the soldier. It must be observed that this Despatch was written two months after the Royal Commission was first appointed, and before it commenced its inquiries, and that its report was not issued until four years later: —

DESPATCH from the Government of India, Public Works Department, to the Right Honourable Lord *Stanley*, Secretary of State for India (No. 17—Military); dated 28 July 1859.

WE propose in this Despatch to lay before your Lordship some authentic details as to the quality of accommodation which has of late years been provided for the European troops serving in India, especially in the territories under our more immediate supervision, that is, in Bengal, the North-Western Provinces, Oudh, and the Punjab.

2. We are the more desirous to do this, because we believe there is no correct apprehension in England of what has been accomplished in this respect. In the evidence of Mr. J. Ranald Martin before the Royal Commission on the re-organisation of the army, that gentleman states, "that he never saw a good barrack in India, though one in Sindh, erected by Sir Charles Napier, is said to be very fine." Though both the force of the general statement and that of the exception are afterwards somewhat qualified, the weight of Mr. Martin's reputation, and this general statement of his experience, are likely to convey

convey a wrong impression where it is not known how much has been done since that gentleman's Indian experience terminated.*

3. Some of the older barracks, such as those at Berhampore and Dinapore, erected in the last century, are handsome buildings and must have cost considerable sums,† but they are built in squares, which is a bad arrangement where so much of health and comfort depends on free access of wind, and they are in other respects defective. They were also, we have reason to believe, often over-crowded. The late Colonel Otter, of Her Majesty's 61st Regiment, told our secretary in this Department that, when he was quartered at Berhampore, 30 years ago, two battalions, mustering some 1,400 men, were lodged in these double-storied blocks, to which we have assigned, after the addition of verandahs and other material improvements, in the arrangements now in progress, only 600 men.

4. The era from which we may date a decided advance in barrack arrangements was the foundation of the Umballa cantonment by Lord Ellenborough in 1843–45, on the abandonment of Kurnal.

The infantry barracks at Umballa were intended only to be temporary. As is (naturally) often the case, they were made to serve their purpose too long, and it became necessary to condemn them. They have lately been almost re-constructed, and will now afford excellent quarters.

5. But the cavalry barracks, built for Her Majesty's 3d Dragoons, by Captain (now Sir Robert) Napier, were in substantials little inferior to anything since built. In them ridge ventilation was introduced, perhaps for the first time. These barracks have always held a high place as healthy and commodious buildings.

6. The erection of the Meerut barracks for two regiments of infantry, in 1845–46, was another step in the right direction. There are four of these to a company, and they have always been healthy. We believe the sub-division of troops in barracks to be a point hitherto too little regarded, and that, with smaller bodies under one roof, we should have nearer approach to the standard of health in private houses.

7. Improvement of a decided character had, therefore, begun some time before Sir Charles Napier took up the subject. But his strong representations were doubtless most effective in fixing the high standard which was aimed at in the barracks, commenced or projected during his command, at Meean Meer, Sealkote, Rawul Pindee, and Peshawur. This scale again became practically the standard wherever new barracks had to be built or old barracks to be remodelled. The two-storied barracks at Cawnpore, the progress of which was interrupted by the revolt, but which are now going on again, are designed on this scale; the new barracks at Agra (truly splended buildings as regards their purpose) have been built on it, as have also the Artillery barracks at Umballa, and the Sapper barracks at Roorkee; the dragoon barracks at Meerut have been remodelled on the same scale; the new barracks at Trimulghery, in the Deccan, are rather an exaggeration of it; and in 1857, when it was considered desirable to prepare standard plans of all military buildings, the Punjab scale was taken as the basis of the plan issued.

8. In the Punjab cantonments, the hospitals, and other subsidiary buildings, have also been designed on a scale equally ample with that of the barracks.

9. The plan of the two barracks at Kussowlee for 250 men each, built in 1855–56, was a modification of the same ample scale of accommodation to suit the Hill climate. Unhappily they have lately been burned.

10. The two great blocks of three-storied barracks lately completed in Fort William are necessarily peculiar in shape and disposition. But they are on no inferior scale of space, and are highly appreciated by officers and men.

11. The Chinsurah barracks are now undergoing alterations to bring them nearer the same standard.

12. All the older barracks in Fort William have also been materially improved of late years, with one exception, viz., the Royal barrack (for officers). The chief defects of this may be remedied without much difficulty, and orders have lately been issued for the necessary changes.

13. In November 1857, to meet the demand for new permanent barracks, which was lately to arise, the Government of India ordered from England complete sets of wrought-iron girders, joists, and roof-trusses for five complete sets of double-storied barracks on the standard scale. The pressure for buildings of more ready construction has prevented our yet making use of these.

One complete set has been sent to Bombay at the request of that Government.

14. For, when troops poured into India, in 1857, it was manifest that there was no time for such elaborate structures. It was necessary to provide for immediate wants as quickly as possible. It could not even be determined where garrisons would be most required when the tide of insurrection should have receded, and many places in which they would certainly be wanted (the whole province of Oudh, for instance) were still unrecovered. All that could be done was to occupy such points, untouched by insurrection, or recovered from

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* In a well-known professional periodical, "The Builder," of 27th March 1858, also appears the following paragraph:—

"The greatest ignorance of sanitary requirements appears to prevail in India, and the condition of the barracks is frightful. This the Government have known for years, but frightful it still remains."

In an after Number, Mr. Martin's evidence is quoted in support of this statement.

† The barracks at Dinapore appear to have been built about 1790–94, and the three two-storied barracks at Berhampore about the same time. The latter, from a bill in the "Military Board Records," September 1794, appear to have cost about 34,000 *l.*

from it, as military considerations, sanitary repute, facilities for construction, or aid from existing buildings, recommended to the selection of Government.

15. In Bengal, the points selected were Dum-Dum, Barrackpore, Hazareebagh, Raneegunge, Dinapore, Darjeeling (as the temporary post of a detachment, perhaps to become permanent), Dacca, and, more lately, Dehree, on the Soane Ferry, and Dorunda, in the Chota Nagpore territory.

16. The plan generally adopted in Bengal for these new structures will be found in Figure 37.

17. The difficulty of rapid construction in India generally arises, not merely from the time required to collect large bodies of artisans, but from the impossibility of suddenly establishing an extensive brick manufacture.* In building against time our officers had therefore to dispense as much as possible with the use of burnt brick. The foundations used were of this material, with a superstructure of brick pillars only, the intervals being filled up with walls of kutcha or sun-dried brick; additional security was given by frequent cross walls.

18. The Court of Directors, in connection with the dispatch of reinforcements, announced their having ordered skeleton frames of iron to facilitate the preparation of cover calculated to provide for 10,000 men; three-fifths of these were sent to Calcutta and the remainder to Kurrachee for use in the Punjab. These frames began to arrive in March 1858, and have been of the greatest service in completing accommodation at Dum-Dum, Barrackpore, and Raneegunge. They are also now being used in construction at Dorunda and Dehree.

19. In the Punjab they have already been not less serviceable at Mooltan. And they are about to be used in the completion of barracks of a more permanent kind at Ferozepore and Meean Meer. The scarcity of timber has rendered this advisable.

20. The drawings (Figures 17 to 21) show the various ways in which these frames have been, or are being applied.

21. Their great defect is the want of height in the side stanchions. This is less felt where a verandah is cut off from the interior space, as at Barrackpore. But where, as in the plan sent out from England, the whole interior is converted into a barrack ward, and the verandah is consequently an extraneous addition, the lowness of the latter is complained of by the medical men.

22. The plan (Figure 37), already referred to, was not at first ready for issue in the Upper Provinces, but general instructions, quoted in the margin, † were given to the then Government of the Central Provinces.

23. The sketches (Figures 22, 24, 25, 26) show the temporary barracks erected in the early part of 1858 at Benares and Allahabad.

24. The new barracks at Benares are excellent, and have given general satisfaction. It was, however, impossible to provide at once all that was required *de novo*. The buildings of a central lunatic asylum at Benares, which had been in progress before the mutinies, were also taken possession of, and altered to suit them as far as possible for barracks. They are defective in some points.

25. At Allahabad a great task was thrown on the engineer. He had to provide for upwards of 4,000 men, besides providing largely for officers, who, in India, have hitherto found their own accommodation. Captain Impey showed extraordinary energy, and acomplished a great feat in providing the required cover in little more than six months. But this pressure almost inevitably led to defects. No exertions could provide all the material that was required. The orders were not strictly observed, and in many of the barracks the floor is barely raised above the general level of the ground.

26. At Roorkee and at Futtyghur, barracks were erected of the pattern shown in Figure 27. They are airy and comfortable.

27. At Muttra, somewhat similar barracks were built. Part of the accommodation required there was, however, given by the adaptation of existing cavalry stables. These are now being replaced by proper barracks.

28. In Rohilkund, generally, the accommodation has hitherto been more or less of a make-shift character. So far as large buildings, cutcheries, and the like could be turned to account, it is unexceptionable. But a large addition had to be made of temporary ranges. These are all well ventilated and sufficient in superficial area, but the walls are generally of insufficient substance, either wattle and dab, or thin brick work.

29. In judging of these and similar structures, the circumstances must be considered. They

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* It is to be remembered that in no part of Gangetic India, except in a few of the largest cities, is any considerable proportion of the dwellings of the people built of brick or stone. Bamboo and mats in Bengal, mud in all the Upper Provinces, are the ordinary materials of construction.

† Extract of letter from D. P. W. to Secretary to Government, Central Provinces, No. 5572 of 20th November 1857:—

"It is suggested that a safe and suitable construction for the temporary barracks might consist in the erection of substantial piers of brick laid in lime mortar for the support of the roof trusses or principal rafters. The intermediate spaces being afterwards filled with walling of sunburnt brick; safe provision, however, for the use of wet tatties being made on the western side of the buildings. But the Government would desire to leave to the superintending engineer a large discretion as to the style of building which he may judge may be most rapidly completed at each locality, provided the construction be secure and the cover sufficient. The accommodation afforded should not, however, be beneath the scale indicated by a ward of 18 feet in clear breadth, with a verandah of 10 or 12 feet wide on each side, that on one side being closed and that on the other open, the whole raised at least three feet from the ground. And the superficial area per man, exclusive of the verandahs, should not be less than 60 feet.

They were the best that could be given at the time, and were immeasurably preferable to the only alternative, that of continuance under canvas.

30. We may here observe that, on the Grand Trunk Road, barrack ranges were erected at proper intervals at rest-houses for the accommodation of detachments proceeding by bullock train. These are shown in Figure 30. They have sometimes been the subject of unfavourable criticism by the passers-by, who were not aware of the limited purpose which they were intended to serve; but we have not heard of their being complained of by the troops. They appear to us (and the Governor General has seen nearly all of them) to be in the main good and fit for their purpose, viz., that of giving shelter during the heat of the day. Some huts of an inferior character that were run up hastily at Raneegunge and elsewhere have been gradually improved or replaced by better structures. In the North West Provinces and Punjab, where the mid-day heat is more severe, barracks of a superior kind, with glazed doors, are now being erected as rest-houses.

31. At Gwalior, after its recapture in June 1858, the lateness of the season and the almost total deficiency in timber necessitated the use of hut barracks of small pretensions. These have this year been almost entirely remodelled, and some considerable progress has also been made with barracks on the scale shown in Figure 35, or of similar calibre.

32. At Jhansi, barracks on that scale are in progress, but the progress has been slow, owing to the more than usually scanty supply of labour in that part of the country. In the meantime all that could be done has been done to adapt existing buildings to the comfortable accommodation of the troops.

33. At Ooraie, where it has lately been necessary to establish a wing of infantry since Calpee proved unhealthy, barracks for a detachment of that strength are well advanced.

34. At Banda means were sadly deficient. Existing buildings were adapted, as well as the circumstances admitted, but Lord Clyde has pronounced against the retention of this as a European station. At Saugor, the accommodation was largely derived from the adaptation of existing buildings supplemented by the erection of several barracks. At Jubbulpore, barracks for a regiment were built, which are well spoken of, but of these no drawings are at present available.

35. At Kamptee, good temporary barracks of a substantial kind have been erected for four squadrons of dragoons, and orders have been given for the improvement of the old infantry barracks.

36. In the Punjab, at Rawul Pindee, barracks for artillery and for an additional regiment of infantry, on the plan formerly used at that station, are in rapid progress.

37. At Cambellpore, on this side Attock, good and substantial temporary barracks for half a regiment, highly spoken of by Major General Sir Sidney Cotton, have been erected.

38. Our present object, however, is not to summarise the progress made in barrack building all over the country, but to show the calibre of accommodation that has been or is being provided.

39. At Delhi all the accommodation was derived from the adaptation of existing buildings. The halls of the palace were converted into comfortable quarters for half a regiment. But though the occupation of the palace was inevitable, the mass of buildings existing within was a serious drawback.

40. At Lucknow, necessarily, the mass of troops was placed in existing buildings as late as the beginning of June 1858; a considerable force was ordered to be hutted at Muriaow (the old Lucknow cantonment), and at Nawabgunge on the road to Fyzabad. At such a time nothing but the most hasty construction was possible, and the huts could only be looked on as a few degrees better than canvas.

41. Before the working season of 1858-59, it became necessary to consider what calibre of accommodation of a more permanent kind should be provided in the recovered provinces, especially Oudh and Rohilkund. To follow the standard plan would have been to say that the troops were to remain for years with cover of a make-shift character. And the expense of building simultaneously a great number of cantonments on the scale of Meean Meer, or Trimulgherry, would have been enormous, even if time had been of litle moment. Indeed, the difficulty found in carrying out rapidly even the more moderate scale of building adopted shows that the achievement would have been impossible.

42. Beyond a certain limit, it is not the indefinite increase of height or space in barracks that is required to improve the health of the soldier. It is not even in the first degree the improvement of drainage and barrack offices, essential as these are, but the right internal economy of the regiment, the reformation of the habits of the men, and the provision of healthy employments as well as of amusement.

43. The plan adopted for barracks in Oudh and Rohilkund, and which is being followed also at Jhansi and several other stations, was approved by Lord Clyde and by Sir William Mansfield, and is shown in Figure 35. It dispenses with the inner verandah of the Punjab plan, a construction regarding the advantages of which opinions differ greatly. But it affords what that plan scarcely does, a separate apartment for meals and occupation in the day time. Good open verandahs all round, clerestory windows, and wide eaves, are additional points worthy of notice. The barracks are for half companies; the wards, separated by the dining hall, for quarter companies. And thus the sub-division to which we have before alluded is obtained.

44. Barracks on this plan are now in progress at Lucknow (Dilkoosha) and at five other stations in Oudh. As yet they have not made much progress except at Lucknow. Bricklayers were very scarce in the districts; the times have been very unfavourable to the

the voluntary migration of artisans; and the demand all over the country simultaneously, not only for barracks, but for railway works, has as yet rendered all attempts to increase their numbers materially very unsuccessful. In the meantime available labour of this kind has been chiefly concentrated on buildings to serve as hospitals, whilst huts of a superior character have been erected for all the troops. A sketch of these is given in Figure 36.

45. Including these statements, we may be permitted to observe that of late years it is seldom indeed that a proposition made to our Government for the addition of any improvement or comfort to the accommodation of the British soldier has met with a negative. The scale on which every description of barrack building was planned, and was being executed in Lord Dalhousie's time,* and up to the outbreak, was one which, if it erred, erred on the side of over-liberality. And this liberality was not confined to barracks, but extended to hospitals, quarters for married men, and all out-offices, regimental prisons, schools, canteens, and workshops had been authorised on a similar scale when the mutiny broke out. (*See* accompanying lithographed standard plans.)

46. As regards the later efforts of our Government and of our servants in the Department during the last two years, we do not pretend to deny that there have been mistakes, and that some disappointment has too often followed sanguine expectations. But if just consideration be given to the state of the country under which these works have been commenced and carried on, to the circumstance that the great sources of timber supply were for a long time absolutely shut up, to the inadequacy of the Department even in its full previous strength to meet so sudden and vast a tax, to the fact that many of our best and ablest departmental officers were engaged in the field, and not a few lost to us altogether, to the consequent necessity of transferring officers from province to province, according to the degree of pressure, a measure attended with disadvantage to the works, with injury to the organization of the Department, and with an excess of strain on many of those concerned, which ere long will further tell on our available strength, and to the great competition for the limited supplies of material and skilled labour which still continues, we trust that what has been done may meet with a fair judgment. A great deal, it must be acknowledged, still remains to be done, notwithstanding that since the outbreak of the mutinies in May 1857, barrack accommodation (not counting huts or other inferior temporary barrack adaptations, restorations, or barracks for married men) has been completed, or is in active progress, for not less than 40,000 English soldiers, within the provinces we have spoken of.

Improvement of Barrack accommodation.

42A. There are now very few barracks in the Bengal Presidency which answer to the description contained in the extract which has been given above (paragraph 41) from the Report of the Royal Commission. At three or four old stations in Bengal Proper, occupied by small bodies of men, there are barracks of great size. The Dalhousie barrack in Fort William, which was built only a few years ago, is intended to hold an entire regiment, and has six rows of beds between opposite windows, but we believe that in no other case for many years past has any barrack been built to hold more than a single company. Since 1857 few barracks have been built for more than half this number, and they have been generally constructed on thoroughly good principles. The half-company barracks divided by a dining hall in the centre (referred to in paragraph 43 of the foregoing despatch), which were built by Colonel Crommelin in Oudh and elsewhere before any attention was called to the subject in England, and five or six years before the publication of the Report of the Royal Commission, are, in all essential respects, identical in design with the best single-storied barracks that have since been erected or recommended either in England or in India. In a memorandum written by Colonel Yule in February 1862, when he made over charge of the Department of Public Works to his successor, he wrote as follows:—"An earnest endeavour has been made in most of the new barracks erected under the Government, of late years, to introduce a greater sub-division of accommodation than had formerly been usual for barracks. Formerly barracks were almost always made for one company, or 100 men. I have long thought this system of accommodating 100 men in one great apartment, even when the amount of cubic air per man was more than ample, an objectionable and injurious one, and one of the causes which keeps the average health of British soldiers in India low. The experience of Europe is, I believe, the same, whilst our own experience of the results of hutting men in small parties is very favourable. The barracks built in Oudh, Rohilkund, Gwalior, Dehree, and lately at Hyderabad, have been for

* The differences which arose between Lord Dalhousie and Sir Charles Napier had apparently led some to believe that because the latter was an ardent supporter of all that tended to the soldier's comfort, the former must have been cold in the matter. Nothing could be more untrue.

for half companies, divided in two by a spacious dining-hall, so that practically they may be considered almost as quarter company barracks. Double verandahs have been dispensed with."

The existing barracks for a whole company are mostly divided into three or more rooms, but the separation of the rooms is usually imperfect, and when, as is very often the case, there are double verandahs to the barrack, it is hardly possible to keep the air in a proper state of purity at all seasons. All that can be done, until these barracks are superseded by others of better construction, is to take care that abundant space is given to the men, and that ample ridge and other ventilation is afforded. This, we believe, has been already done in every case.

Glazed windows in barracks.

43. The statement made in the Report of the Royal Commission, that "Barracks and hospitals have frequently no glazed windows, and only wooden shutters," certainly does not apply to this Presidency. So far as we have been able to discover, there is not a single barrack or hospital of which this is true, or of which it has been true for many years past. The statement that "both barrack and sick wards are, as a rule, dark," is perhaps true of the buildings with double verandahs, but of no others. Whether, however, this is a disadvantage is doubtful, although, upon other grounds, we strongly object to buildings of this construction. Almost every body who has lived in the upper provinces of this Presidency during the hot weather knows that excess of light and excess of heat almost necessarily go together, and that, however theoretically objectionable, exclusion of light is essential to comfort. Unfortunately, it is not always easy to exclude light without interfering with ventilation.

Principles on which barracks are in future to be constructed.

44. After full consideration of the subject, and after consulting the most competent authorities, the general rules and principles have been laid down by the Government, according to which all barracks for European soldiers are in future to be invariably constructed. From these fundamental rules, there can in no case be any departure, and specimen plans, suitable for different localities in the plains and in the hills, have been prepared. The following are the principal rules that have been laid down regarding the construction of barracks for unmarried soldiers.

Under ordinary circumstances, no barrack for infantry will be built to hold more than half a company. Barracks for whole companies will only be considered admissible in special cases, as, for example, in a fort. For cavalry, each barrack will hold a troop. For a light field battery of artillery there will be three barracks, one for each division. The number of men provided for under one roof will be, in the case of the infantry, 40; in that of the artillery, 44; and in that of the cavalry, 60. The barracks will contain sleeping rooms capable of holding from 16 to 22 men in each. The latter number will in no instance be exceeded. The rooms will in all cases be entirely separate, having no direct communication with each other. Double-storied barracks will, as a rule, be adopted in all parts of India, the upper floor being alone used as dormitories, and the lower floor being occupied for day-rooms and other purposes. About one-half of the space in the lower floor will usually consist of day-rooms for the men, one-fourth will be an open arcade for exercise and amusement, and the remainder will be used for auxiliary purposes, such as store-room, sergeants' mess, regimental library, recreation-room, &c. All out-offices, such as cook-rooms, lavatories, latrines, &c., will be provided in separate buildings. The minimum space allowed in the sleeping rooms in the plains will be as follows:—7 ½ running feet of wall space per man; 90 superficial feet per man; width of ward, 24 feet; height of wards in both floors to wall plate, 20 feet; this will give 1,800 cubic feet per man. In stations in the hills, the space allowed will be somewhat less, but the allowance will never be less than 77 superficial feet and 1,232 cubic feet per man. There will be only two rows of beds in a room, between opposite windows; not more than two beds will be allowed in the wall space between two contiguous doors; and no bed will be placed within nine inches of a door. There will be a single verandah, 12 feet wide, all round the barrack, Quarters for two sergeants will be provided in each half-company barrack. Each sergeant's quarters will be on the scale authorized for married men. Separate married quarters will be provided for the rest of the non-commissioned regimental staff. The principles have also been laid down according to which barracks for married soldiers are

to

to be constructed. Each family will be allowed two rooms, one measuring 16 feet by 14, and one 14 feet by 10. The quarters will, as a general rule, be grouped in blocks to suit the wants of troops and companies; each block for a troop of cavalry or battery of artillery will ordinarily contain eight quarters, and each block for a company of infantry will contain 10 quarters. There will be an open verandah on both sides of each block. The quarters of each family will be entirely separated from each other by division walls running up to the roof. As a general rule, single-storied buildings, well raised above the ground, will be adopted, but double-storied buildings will be constructed when they are shown to be more suitable in any particular case. Covered passages will be built to connect the barracks and out-offices, and latrines and bathing rooms will be provided for men and women in entirely distinct buildings.

The resolution of the Government of India* in which the foregoing rules have been embodied, has been sent to the Home Government for approval In all respects of importance they coincide with the views expressed by the Royal Commission and by the Barrack and Hospital Improvement Commission, and there can be no doubt that if any modifications be hereafter ordered, they will not affect the general principles that have been laid down.

Day and recreation rooms, and other accommodation.

45. It has been noticed above that the lower storeys of the new barracks will contain the day rooms and other auxiliary accommodation. It is desirable that we should state in some detail the nature of the arrangements which the Government proposes to carry out.

In each half-company barrack, the portion of the lower floor devoted to day-rooms will be divided into three compartments. There will be a general mess-room for the barrack, and two other rooms, one for each sub-division of the half-company. It is considered desirable to separate the recreation rooms from the mess-rooms, so that the occupants of the former may not be inconvenienced by flies, by preparation for meals, &c.; and the sub-division of the recreation-rooms has been thought desirable, with the object of affording to the men places more quiet and private than they could otherwise obtain. These rooms will be furnished with tables and short benches, and in the Upper Provinces with fire-places. In addition to these rooms, there will be for each regiment large general recreation and refreshment rooms, with separate reading room and library; and for at least eight out of the 10 companies there will be open arcades in the lower story of the barracks, which will furnish places for drill, exercise, and amusement, and will remove much of the temptation to the men to wander out in the sun when weary of the barrack-rooms. The reading rooms will be furnished with presses for the books supplied by the Government, and for the regimental library. The question of the supply of books by the Government is to be considered separately. Some of the regimental workshops will also be provided for in the lower storeys of the barracks; but for carpenters' shops and other noisy trades, separate building will be provided. The canteen will also be in a separate building.†

In addition to the means of employment and recreation that have been above noticed, it is proposed to provide for each British regiment the following: (1), a double fives court for each wing of the regiment, on an improved plan, one court for each wing to have a back wall to admit of its being used for racket-playing; (2), a double skittle alley for each wing, one of each to be of sufficient length to allow of the American bowl game; (3), a gymnasium according to the English standard plan as far as practicable; (4), a swimming bath for each wing for the men, and another, if this should be proved to be desirable, for their families, to be raised above the level of the ground to admit of complete natural drainage; (5), a cricket ground, to be railed in and turfed by Government; (6), a sergeants' mess, with reading and recreation rooms in a central position, convenient to the staff sergeants' quarters, or, in the case of batteries of artillery, or other small bodies of men, under the same room as the staff sergeants' quarters; (7), a womens' day-room for each wing of the regiment. The expediency of ultimately providing a theatre, for theatrical performances and for lectures has also been recognised, but it was considered that this should only

* Public Works Department, Circular No. 89, dated 16th December 1864.

† Resolution, Government of India, Public Works Department, No. 1M—2, dated 3d January 1865.

only be done when provision had been made for the other more pressing requirements of the troops.*

Provision of quarters for married men.

46. It has been noticed elsewhere (para. 37) that the number of married men is at present much below that which is allowed by the regulations of the army. Considering that the number will probably increase, and that it is desirable that accommodation should be ready whenever it is required for the wives and children of the soldiers, it has been determined by the Government that married quarters should at once be furnished for 12 per cent. of the rank and file and drummers.† The nature of the accommodation provided for married soldiers has already been described (para. 44.)

Principles of hospital construction.

47. The principles upon which hospitals for the European troops in India should be constructed have been considered during the past year, and standard plans have been prepared. The same course will probably be adopted that has been taken in respect of barracks. Certain fixed rules will be laid down, which will be obligatory on all occasions in which new hospitals are required. The chief of the proposed rules are as follows:

All regimental and detachment hospitals will be double-storied buildings. The whole of the wards for the sick, together with a certain amount of necessary subsidiary accommodation, will be arranged in the upper floors, and the day-rooms, quarters for the medical subordinates, administrative offices, store-rooms, &c. will be provided in the lower floors. Unless, under exceptional circumstances, when there may be a want of sufficient building space, no hospital will be built with more than two storeys of sick wards.

The maximum number of sick in one building will be 60, but these will not be under one continuous roof, each building being divided into two sections, and each having, as nearly as possible, an independent ventilation. The hospital for a regiment of infantry will consist of two such buildings for the men, and one building for the women and children. For a regiment of cavalry, there will be one building for the men, and one for the women and children, and one building will serve for two batteries of artillery. In each hospital there will be separate wards for the sick and for convalescents. Ward offices, day-rooms for sick and convalescents, quarters for medical subordinates, for hospital sergeants and orderlies, and the necessary store-rooms, surgery, kitchens, bath-rooms, privies, &c.; many of these requirements will be provided for in detached buildings.

The maximum number of beds in any ward will be 32. The beds will be arranged on the opposite sides of the room between the doors; there will not be more than two beds between the opposite doors of the ward, and not more than one or two beds between two doors, or between a window and door on the same side of the ward. The ordinary width of a ward will be 26 feet, and the height 21 feet; each bed will have 10 feet of wall space, 130 square feet, and 2,730 cubic feet. These plans are, in all essential respects, exactly similar to those that have been recommended by the Royal Commission, by the Barrack and Hospital Improvement Commission, and by Miss Nightingale, and although they may be in some points modified, we believe that they will, in all essential respects, be approved by the Government. The principles of hospital construction and management have been so completely studied, and have been so completely verified by long experience in England and in France, that no doubt remains regarding them. There is no subject of which it can be asserted with greater confidence that it is thoroughly understood, and no subject on which all authorities are more unanimous.

Hospitals for native troops.

48. It may here be mentioned that the principles on which hospitals are to be constructed for native troops have also been laid down during the past year, in the same manner which has been followed in respect of hospitals for Europeans. Although the buildings for natives will necessarily be less elaborate and expensive, the principles of construction will be in both cases the same. Various other measures are proposed for improving the hospitals of the native troops,

* Secretary to Government of India, Military Department, No. 824, dated 25th November 1864, to Quartermaster General of the Army.

† Resolution, Government of India, Military Department, No. 388, dated 20th September 1864, and Resolution, Public Works Department, No. 902M—5629, dated 25th November 1864.

troops, for affording more hospital accommodation, and for improving the administration.

Hospitals for native servants of British regiments.

49. No sufficient arrangements had hitherto been made for affording medical assistance to the native servants attached to British regiments. It has now been determined by the Government that a small hospital for the reception of severe cases of sickness or accident occurring among native followers shall be provided near the regimental hospital; this will also be used as a dispensary where out-patients can attend to receive medicine.

Temporary arrangements for affording full amount of space in barracks and hospitals.

50. The provision of new barracks to the full extent that is required must necessarily take a considerable time, whatever efforts be made to hasten the work. The Government has therefore ordered that in all cases in which the European soldiers have not the full amount of space in their barracks which has been determined upon as the standard, viz., 90 superficial feet of floor space per man, temporary accommodation shall at once be provided to the full extent required, whatever be the cost. These instructions are now being carried out. The Returns that have lately been received show that there are few barracks in this Presidency at the present time in which the full amount of 90 square feet per man is not afforded, and it is believed that, in a very short time, there will be none at all. So far as our information extends, there is even now no barrack which can be said to be crowded to an objectionable extent. We have not referred to the cubic space that is allowed, because this is always ample. It is seldom less than 1,200, and often more than 2,000 cubic feet per man.

The Commission has lately represented to the Government that it would be desirable to issue similar orders with the object of preventing the possible overcrowding of the hospitals of the European troops. It has been recommended that whenever at any station the existing hospital accommodation is insufficient to provide for 12 per cent. of the average strength of the troops, at the rate of 130 superficial feet per patient, the standard rate which has been proposed for future adoption, temporary additional accommodation should be provided to the full extent required.*

Even when hospital accommodation is provided at this rate, it may sometimes happen, during especially unhealthy seasons, that it is insufficient. Such cases can only be provided for when they occur, and we believe that there can seldom be any great difficulty in meeting them. The principle should, we think, be acted upon, which has already been laid down by the Government on the recommendation of the Cholera Commission, for the prevention of crowding in hospitals during the prevalence of cholera. If temporary hospital accommodation cannot be given, all unimportant cases, the treatment of which in hospital is not essential, should be discharged. The following extract from the Report of the Cholera Commission is applicable to all exceptional occasions in which the number of sick is so large that the whole cannot be accommodated in the hospital: "Trifling cases of ordinary disease ought at such times to be considered of very little importance. They should receive a palliative treatment in barracks or in camp. It is far better that they should receive no treatment at all, than that they should be admitted into hospital."†.

Magnitude of the works in progress for the permanent accommodation of the Army.

51. It has been determined by the Government that the work required for the permanent accommodation of the Army ought to be carried out in the shortest practicable time. It is believed that the whole may be finished in four or five years. The work comprises, first, the provision, whenever necessary, of entirely new barracks and other buildings for the European troops at the regular stations of the army; second, the improvement, whenever necessary, of all existing buildings, so that they may be made to afford accommodation approximately equal to the new scale which has been laid down; third, the formation of new hill sanitaria for the European troops; fourth, the construction of fortified forts and places of refuge; fifth, general works in military cantonments, such as roads, churches, water supply, lighting barracks with gas, drainage, conservancy, &c. &c.; sixth, provision, when necessary, of new accommodation

* Since this was written, these recommendations have been carried out, with this exception, that it has been considered necessary to substitute 100 for 130 square feet as the minimum space to be afforded.

† Report of Cholera Commission, Part III., Sec. 500.

accommodation for native troops; seventh, provision of temporary accommodation for European troops, pending the completion of permanent buildings; eighth, provision, when necessary, of officers' quarters; ninth, works required for the Ordnance and Commissariat Departments, bakeries, slaughter-houses, &c.

The probable total outlay upon these works is estimated at not less than 10 millions sterling.

We believe that it may safely be asserted that in no other country has the construction of works of such magnitude, and involving so great an expenditure, ever at one time been undertaken by a Government for the benefit of its soldiers. It is not less certain that, if these works be completed in the manner and upon the scale proposed, there will be no country in the world which can be compared to India in respect of the accommodation provided for the troops, and in the general arrangements made for their health and comfort.

Col. Crommelin's designs for barracks and hospitals.

52. The whole of the plans according to which the new barracks and hospitals and other buildings required for the accommodation of the European troops are to be constructed, have been prepared by Colonel Crommelin, R.E. Our Commission has frequently had occasion to express its opinion of the excellent manner in which this important work has been performed. The Government has been fortunate in obtaining for this purpose the services of an officer who possesses so complete a knowledge of the sanitary principles upon which military buildings should be constructed. It may be confidently stated that there are no barracks or hospitals in any country more thoroughly satisfactory than those which have been designed by Colonel Crommelin.

Ventilation and cooling of barracks and hospitals.

53. The important subject of the ventilation and cooling of barracks and hospitals, and of the application of tatties, thermantidotes, and punkahs, has been under consideration. Many experiments have been tried, some of which have apparently been successful, but which, generally speaking, have led to no good result. At Agra, five of the barracks have been fitted with thermantidotes, with underground channels to convey fresh air to all parts of the buildings, and the local authorities consider that the measure has been very beneficial. Similar plans had previously been carried out with great success in the Agra Central Prison, under the direction of Dr. Stewart Clark, Inspector General of Prisons, North-Western Provinces. It has now been determined by the Government that the whole subject ought to be taken up in a systematic manner, and that this can only be accomplished efficaciously by requiring a select body of officers, really qualified by special mechanical training, to experimentalise and report on the subject. A committee of experienced officers has consequently been appointed with this object at Roorkee, where the workshops afford special facilities for carrying on the necessary experiments.* We believe this to be a subject of great importance, and we hope that the investigations of the Committee may lead to very valuable results.

Provision of saddlery rooms in cavalry barracks.

54. One of the recommendations of the Royal Commission was to the effect that saddlery rooms should be provided in all cavalry barracks, and saddles removed out of the barrack rooms. The returns which we have received being incomplete, we are unable to assert that separate saddlery rooms everywhere exist; but the provision of such rooms has long been recognised by the Government as a matter of course, and if there are still cases in which saddles or harness are kept in cavalry or artillery barrack rooms, they are exceptional.

Lighting barracks and reading rooms. Introduction of gas.

55. One of the recommendations of the Royal Commission appointed to inquire into the sanitary state of the army in India referred to the necessity of improving the means of lighting the barracks and reading rooms in the evening. There can be no doubt that this is a matter of much importance. No small amount of intemperance and disease has its origin in the difficulty of employing themselves in a rational manner in the evening, which the men often experience in consequence of the imperfect lighting of the barracks. The provision of sufficient means of lighting is, however, not an easy matter. The question has been under the consideration of the Government of India during the past year,

* Secretary to Government of India, P. W. Department, No 657 M-4217, dated 2d September 1864, to Secretary to Government, North-Western Provinces.

and the following extracts from the orders that have been given will show what has been done and what is proposed:—*

"The Government of India is satisfied that something must be done towards greatly improving the present system of lighting barrack buildings; and, although the data are very imperfect, they appear to afford sufficient grounds for leading to the inference that gas, which has been adopted almost universally elsewhere, should also be introduced into all Indian Military Cantonments. Wherever coal can be produced at moderate cost, it seems obvious that coal gas will be more economical than oil gas, and this will be the case in many stations. To arrive at a practical conclusion as to the probable cost of lighting with coal gas, it will be desirable to make an experiment at some convenient station where coal will certainly be the cheapest source of supply, and his Excellency in Council considers that Dinapoor is a suitable one at which to test the coal gas. * * * The design being completed, as well as the information of the local officers will admit, it should be sent to the Secretary of State, with a request that it may be submitted to an experienced gas engineer in England, and that the needful steps may be taken for obtaining the plant, to be sent out with an intelligent person to superintend the execution of the works. * * * * But as coal gas will not be procurable everywhere, the provision of oil gas will probably be necessary at many stations, if gas is to be used at all. From Lieutenant Colonel Robertson's estimate it seems likely that oil gas may be supplied at moderate prices; but this question is one that can only be fully tested by a trial, which should be made, if on further inquiry the cost does not seem excessive and the results are otherwise encouraging. His Excellency in Council, therefore, considers that a project should be prepared for some station where coal will almost certainly never be available, and where oil may be expected to be procured at reasonable cost, and that Rawul Pindee seems a good place to select for the purpose, unless the local government would desire the trial to be made at some other station."

It is hoped that the result of these measures will be the general introduction of gas for lighting barracks, but as some time must necessarily elapse before this can be carried out, experiments are being made with the object of ascertaining whether, as a temporary arrangement, some of the improved cheap oil or other lamps of the present day might not at once be adoped, in supercession of the existing very imperfect oil lights. Calcutta is the only place in this Presidency which is now lighted with gas, and gas has been already introduced into the barracks in Fort William.

The grant of additional lights to reading-rooms, and to non-commissioned and married men's quarters, has been sanctioned by the Government.

Regimental workshops, reading and recreation rooms, &c.

56. The Royal Commission has stated in its Report that "means of recreation are few, of exercise none, of instruction limited;" that "the men's amusements, such as they are, are always connected, more or less, with drink, and they are everywhere most deficient in amount;" that "at most of the stations there are no workshops at present; while it is admitted that everywhere they would be most useful." This subject is referred to in the fifth recommendation of the Commission.

We think that the Commission would certainly not have written in the terms quoted above, had it known how much had been accomplished in respect of these important matters before its Report was issued. We are far from saying that there was not, and is not still, much room for improvement, but there can be no question that in regard both to the useful employment and to the means of recreation of the soldiers more has been done in India than at home, or in any other part of the empire. Nearly two years before the issue of the Report of the Royal Commission, the Commander-in-Chief in India, Sir Hugh Rose, had instituted the admirable system of regimental workshops, which has since been developed with such excellent success. The system was established by General Order of the Commander in Chief on the 10th September 1861; and in General Orders of the 6th April 1864, Sir Hugh Rose stated that it had been introduced into five regiments of cavalry and 32 battalions of infantry in the Bengal Presidency. The following list is given of the trades that are practised: Tailors, carpenters, weavers, brushmakers, bookbinders, blacksmiths, tinsmiths, masons, labourers,

* Resolution, Government of India, Public Works Department, No. 554—6 M.-3703, dated 8th August 1864.

labourers, watchmakers, painters and glaziers, sawyers, bakers, saddlers, wheelwrights, shoemakers, armourers, shoeing-smiths, gardeners, printers, turners, and engravers. According to the last Report, published in General Orders of the 6th June 1865, the number of men regularly employed in the workshops during the past year was 791; the amount of money actually realised for work done during the year was 15,787 *l.*, and there was stock in hand to the value of 6,123 *l.* "In publishing," says the General Order just referred to, "for general information, the reports of workshops in British regiments serving in the Bengal Presidency for the year ending 31st December 1864, His Excellency the Commander in Chief congratulates the army on the rapid and successful development of a system instituted by Sir Hugh Rose in September 1861. The system was in full working order in this Presidency in no less than three regiments of cavalry and 33 battalions of infantry. Conspicuous among these, His Excellency observes the 7th Dragoon Guards, the 7th, 19th, 42nd, 79th, and 91st regiments of foot, and the 2nd battalion of the Rifle Brigade. From recent returns received from the Madras and Bombay Presidencies, His Excellency is glad to find that workshops have been established in six battalions of infantry in the former; and in 14 batteries of Royal Artillery, two regiments of cavalry, and 10 battalions of infantry, in the latter; whilst the most distinguished regiments in these Presidencies are the 1st Royals, and 3rd Battalion 60th Rifles, the 1st Battalion 4th, 33rd, 44th, and 72nd Regiments of Foot. So satisfactory a result could not have been attained without the zealous endeavours of commanding officers, and the able and hearty co-operation of the individual officers more particularly connected with the workshops, and Sir William Mansfield desires to thank all those whose efforts have resulted in so marked a success."

The following extract from the General Orders of his Excellency the Commander in Chief, dated 6th April 1864, refers to other means of occupation and recreation that have been provided for the soldiers:—"His Excellency has seen at his inspections that the industrial system for children has been carried out with very good effect in several regiments; and that the soldiers' children, the girls, have not only learned to make their own clothes and to sew neatly, but have also acquired a useful and practical education, under the superintendence, in many cases, of excellent schoolmistresses. Generally speaking, throughout the army in Bengal, the system of manly exercises and out of door recreation, combined with gymnastics, has kept pace with the useful industrial occupation of the men. In many regiments, such as the 1st battalion 20th, 38th, 51st, and 101st Regiments, and the 3rd Battalion Rifle Brigade, each company has its cricket club, who play matches with other regiments in their stations, or among themselves, also quoits, bowls, &c., &c. There is not a regiment that has not its reading and recreation room, well furnished and fitted up, and supplied with the means of lighting, &c. These are in the evenings crowded with men, who can there obtain wholesome refreshments, tea, coffee, cold meat, &c. Spirits are not allowed. His Excellency has observed, too, with much gratification, the increasing popularity and success of regimental libraries, as shown by the number of subscribers; in the 3rd Battalion Rifle Brigade, 671; 2nd Battalion Rifle Brigade, 675; 81st Regiment, 640; 1st Battalion 7th Fusiliers, 607; 1st Battalion 23rd Regiment, 580; 34th Regiment, 523; 35th Regiment, 506; 80th Regiment, 504; 104th Regiment, 495; 1st Battalion 20th Regiment, 475; 71st Regiment, 440; 88th Regiment, 424; 90th Regiment, 412, Nor has this favourable state of things been confined to the Presidency of Bengal. His Excellency has received reports from the commanders in chief of both the Madras and Bombay armies, showing that great progress has been made by the regiments quartered in both these Presidencies towards the establishment of workshops, reading rooms, gymnasia, and other means of occupation and amusement. * * * To this system of useful employment and recreation may, in a great measure, be attributed a considerable decrease in the consumption of ardent spirits in this army, than which nothing can be more gratifying." In acknowledging the receipt of this Report, the Adjutant General was desired to "convey to his Excellency the Commander in Chief the cordial expression of the gratification with which the Government of India have received this satisfactory Report, showing, as it does, the hopeful growth and progress of a system so eminently calculated to improve, both morally and physically, the status of Her Majesty's British troops in this country. The Government of India has satisfaction in being able to congratulate Sir Hugh Rose upon the early success of this beneficial project, for the establishment

establishment of which his Excellency has evinced so much anxiety.* The continued growth and extension of the system will always remain an object of great interest to the Government."

Employment of soldiers on public works.

57. In the construction of the extensive works which have to be provided for the accommodation of the army, the Government of India has expressed the hope * that it may be found possible to give employment on a large scale to the European soldiers, with much advantage to themselves and to the State. In building the barracks at Asserghur and in carrying out other public works at that station, it was found impracticable to obtain a sufficient number of native workmen, and a party of soldiers was employed with great advantage in many occupations requiring both skilled and unskilled labour. Rates of pay varying from 8 annas to 1 rupee 4 annas a day, were given to the men, and in several instances the works were carried out within the estimated rates, and in some cases more cheaply than if they had been executed by native labour. The supervising officer of the Public Works Department reported that "the men have worked well, and conducted themselves admirably, always sober on the works without exception, and strictly obedient in the performance of whatever work may be pointed out to them; without the aid of the troops it is almost impossible to say when the barracks would be completed." The Government considered that similar measures to those carried out at Aseerghur might often be adopted, and that although during the hotter months the greater part of such operations must doubtless be performed by native labour, yet there will still be much room for the employment of the troops. "The Governor General in Council is of opinion that if the European troops, at stations where new barracks are about to be built, were, as fully as possible, employed on the building operations during the cold seasons, their utility would be greatly increased permanently, and that capabilities for performing similar work hereafter might be developed, which, under a proper system, could be maintained at no expense to the State, and with very great improvement both to the personal condition of the soldier, and to his utility to the Government." †

In noticing the efforts that have been made to give employment to the soldiers, mention must also be made of the work that has been performed by them in the construction and improvement of the mountain road in the Himalaya between the stations of Murree and Abbottabad, in the Punjab.‡ The experiment of employing English soldiers on hill roads was tried in 1863 on a small scale, and was pronounced by the local and supreme Governments to have been very satisfactory in its results, except in a financial point of view. During 1864, the experiment was carried on upon a larger scale. The strength of the working parties was 600 men, consisting of detachments of the regiments stationed at Rawul Pindee, and the men were employed for a period of nearly six months, from May to October. They were under canvas for four months, and for two months in the rainy season they were accommodated in roughly built but commodious huts, at elevations of from 7,600 to 8,400 feet above the sea. The health of the men was excellent, and they appeared to derive great benefit from their employment in a fine climate. During the six months there were only two deaths among 632 men, one caused by fever contracted at Peshawur, and the other by an accident resulting from intemperance, in which state a man, out of working hours, fell down a precipice. Financially, there was an apparent excess of expenditure, amounting to 397*l.* over the sum which the work would have cost if the soldiers had not been employed, the total money value at average rates of the work done being 2,941*l.*, while the amount of working pay to the soldiers was 3,338*l.* But as a set-off against this apparent loss, it has to be considered that if these men had remained in the plains, it would have been necessary to provide additional temporary accommodation for them, unless the barracks at Rawul Pindee had been crowded to an extent which would have endangered the health of the whole of the European troops quartered there; and that either the work on these hill roads will not be done at all, or that the workmen, if hired, might have to be withdrawn

* Resolution, Government of India, Public Works Department, No. 938 M.–5815, dated 7th December 1864.

† Resolution of Government of India, Public Works Department.

‡ The foregoing account of these operations is taken from the Report by Lieutenant-Colonel, S. H. J. Davies, Executive Engineer in charge of the work.

drawn from the construction of the barracks at Rawul Pindee. It is hoped that, under improved arrangements, even the small loss that has actually occurred will be avoided in future. The Government has sanctioned the continuance of the experiment of employing soldiers on this work for another year. *

Soldiers' gardens.

58. The Royal Commission recommended the establishment of "soldiers' gardens, in connection with the station, wherever practicable." The Commission does not appear to have been aware of the great and successful efforts which had been made with this object by his Excellency Sir Hugh Rose, long before the publication of its Report. The progress made in the establishment of soldiers' gardens has been so rapid that, in the General Orders of the Commander-in-Chief, dated 5th July 1864, publishing rules for their construction, working, and maintenance, Sir Hugh Rose was able to express the hope "that with the liberal aid afforded by Government, every barrack square in India will shortly be similarly improved and ornamented."

"Soldiers' Gardens"—we quote from the General Order just referred to—"are of two kinds; 1st, small garden plots immediately in front or rear of each company, sub-division, or married barrack; and 2d, large gardens situated at a convenient distance from the barracks. This latter description of garden is usually laid out with taste, and affords a pleasant and agreeable lounge for the soldier. Gardens of the first description are usually irrigated by the surplus water from the lavatories, and as they are of small extent, the produce obtained for them is only sufficient to supply some trifling addition to the cultivator's ration. Experience, however, has proved that gardens of the second description, if of sufficient size, will, under judicious management, and provided they have been fairly started, not only pay their own expenses, but leave a considerable surplus."

A separate fund, called the garden fund, has been established in each regiment of cavalry and infantry, in each division or battery of artillery, and at each convalescent depôt. The first expense of turning up the soil, and enclosing the garden with a fence or wall, is borne by the Government. The necessary arrangements for maintaining a sufficient supply of water for irrigating the gardens, for keeping the wells, reservoirs, and water-courses in proper order, for supplying gardening tools, and vegetable and flower seeds, are also made at the expense of the Government. So far as is practicable, the Commissariat Department is bound to have recourse to the soldiers' gardens in providing vegetables to the troops, and to pay a fair price for the vegetables furnished. Prizes are given every year to the soldiers who have been the most industrious and successful in gardening; the day on which the prizes are distributed is made a general holiday for the regiment,* "the band playing at the place of distribution, and the regimental school children attending while the distribution takes place," and Sir Hugh Rose hoped that all the officers would make a point of being present. When a regiment leaves a station, native gardeners are entertained to keep up the garden until it is taken over by another regiment.

Improvement of beds and bedding in barracks and hospitals.

59. Among the subjects affecting the health and comfort of the European troops which have been taken up by the Government of India during the past year, the improvement of the beds and bedding is one of much importance. For a long time past there has been great and reasonable complaint on this head. The bedsteads have generally been very unsatisfactory, being mostly made of wood and infested with vermin to an extent which can hardly be exaggerated. The bedding also has been very bad; no mattresses, or palliasses, or bolsters have been allowed, although they are furnished to the soldiers in England and in all the Colonies; wadded cotton quilts which cannot be washed, and which are frequently in a more or less filthy and unwholesome condition, have been supplied, with blankets of Indian manufacture and very inferior quality. The number of sheets allowed has been insufficient for cleanliness or decency, and their quality has been bad. The bedding, when once issued to the soldier, has been considered his property, and, under the system which has prevailed, there has

* Resolution, Government of India, Public Works Department, No. 129-30 M. 783, dated 13th February 1865.

has been no security, and indeed hardly a possibility, that the bedding should be kept clean and in proper order. Our Commission has recommended to the Government the introduction of a system similar to that in force in England and in the Colonies, under which bedding is not given to the soldier as his property, but is furnished by the barrack department in the same manner in which furniture and all other barrack stores are issued. Barrack masters are there responsible for keeping the whole of the bedding in a proper state of cleanliness and repair, for ensuring that every soldier has a comfortable bed, and for providing him with clean articles of bedding whenever necessary. These recommendations have been approved by the Government, and orders have been issued for carrying them into effect. Every soldier will be provided with a good iron cot, and every bed will be furnished with a comfortable palliasse, a bolster, a small setringee or cotton rug, two sheets, two English blankets, and a leather strap. It is believed that this most useful reform will be carried out not only without any additional annual expenditure, but that it will lead to an actual saving of money. Similar important improvements will be carried out in the system of supplying bedding to the hospitals. Some of these have been already sanctioned; but as the question of hospital bedding has not been entirely disposed of, we shall not now enter into further details.

Orders have also been issued for placing on a more satisfactory footing the supply of bedding to troops on board ship proceeding to England. The men have hitherto taken with them their Indian bedding, consisting of the ordinary wadded cotton quilts and country blankets. The quilts were found to be most inconvenient on account of their bulk, and were often so offensive that it was necessary to throw them overboard. English blankets will now be furnished to all men proceeding home, and to invalids, and to soldiers' wives, according to the scale laid down in the Regulations for Her Majesty's Transport Service.

Improvements in camp equipage.

60. A revised system of camp equipage for the army in India was proposed during the past year by his Excellency the Commander in Chief, and measures have been taken which, it is hoped, will lead to great improvements in the pattern of the tents supplied to the troops. Although the tents furnished in India are probably far superior to those allowed to any other army in the world, their ventilation has hitherto been defective, and there are considerable practical difficulties to be overcome before this will be completely remedied.

Provision of ablution and bath accommodation.

61. In the provision of ablution and bath accommodation there has been great improvement since the evidence before the Royal Commission was taken. Ablution rooms are everywhere provided, with a fair supply of water; and, as we have noticed in another part of this Report, four separate rooms where men can bathe privately have been furnished during the past year for each company. These will be increased hereafter to seven or eight, when ablution rooms are built according to the plans that have been lately sanctioned. Swimming baths have been very generally constructed at the stations for European troops; and, under the new orders, to which reference has been made elsewhere, there will be a bath of this kind for each wing of every regiment.

Although very much has been done to improve the ablution and bath accommodation, it will not become really satisfactory until better arrangements are made for affording a more ample supply of water than is now usually available at our Indian stations. It is proposed that experiments on a large scale shall be undertaken at some of the principal stations with the view of ascertaining what plans are practically the best. Measures of this kind were sanctioned last year for Fort William, and these have already made great progress towards completion. The scheme that has been adopted was prepared by Captain Trevor, R.E., Garrison Engineer. The best water in Calcutta has been proved by analysis and by experience to be that of carefully preserved tanks on the maidan. These, therefore, will be the source of supply for drinking, cooking, and ablutionary purposes, and 20 gallons per day will be furnished for 5,000 persons, a number much larger than the actual population of the fort. This water will be supplied partly at a high and partly at a low level. The water for the high level service will be pumped into iron reservoirs placed on the roof of the Dalhousie barrack, and capable, in the aggregate, of containing a sufficient supply for all the upper-roomed barracks of the Fort. The low level supply will be pumped into a reservoir in a suitable situation, and the water will be distributed by means of iron pipes, with taps and stand-pipes in convenient places.

In addition to this water supplied for personal requirements, 30 gallons per head for 5,000 persons, will be pumped up from the river, and after filtration, will be distributed by means of open masonry aqueducts carried along the main roads, with small reservoirs in convenient positions.

Analysis of drinking water.

62. One of the recommendations made in the Report of the Royal Commission is "that all existing water sources be subjected to analysis, and those rejected which contain matters injurious to health." There can be no doubt of the importance of this subject, and regarding it we have already addressed the Government. It has been under the careful consideration of our Commission, and we have consulted many experienced chemists and other authorities regarding the manner in which the necessary measures should be carried out. The obstacles in this country in the way of an inquiry of this kind are very great. There are few officers competent to undertake the work, which is one of much difficulty, requiring for its satisfactory performance altogether special qualifications; and we have found the differences of opinion among the highest authorities almost irreconcilable, as to the manner in which even the purely chemical part of the investigation ought to be carried on. Nor will any mere chemical analysis be sufficient to enable us to determine, in the majority of cases, either whether the water is wholesome, or what practical measures ought to be taken for the improvement of existing sources of supply. We have been unable hitherto to make any final recommendations to the Government regarding the procedure which ought uniformly to be followed with the view of obtaining the greatest amount of advantage, but we hope before long to do so. Meanwhile the discussion of the question by our Commission has not been fruitless. An analysis of the water supplied to the troops at the principal stations of the North-Western Provinces and the Punjab has been already ordered to be undertaken, and the inquiry has been going on for some months. We have hitherto received hardly any reports of what has actually been done. These operations, although they will certainly not be in themselves sufficient, will be a very useful preparation for the more complete measures which we hope to see carried out.

Filtration of water in barracks and hospitals.

63. The Royal Commission appears to have been under the impression that no means of filtration were adopted in barrack. This is incorrect, so far at least as this presidency is concerned. For some years past, two filters have been supplied to every barrack and hospital, whenever the medical authorities have recommended their use. It is believed that they are now everywhere furnished. These filters are made according to the method very commonly followed in this country. Each filter consists of three earthen jars, the two upper ones being partially filled with sand and charcoal. For the removal of impurities in suspension, these filters are very effectual, if proper care be taken of them, but they cannot be considered always to afford sufficient means for the purification of the water supplied to the troops.

Diet of European troops in India.

64. The subject of the diet of the troops in India received much attention in the Report of the Royal Commission. It is one of so much importance, and so much discussion has taken place regarding it, that it is desirable that we should show in detail what has been done. The following memorandum has been prepared for this purpose by Dr. C. A. Gordon, one of the members of our Commission. There can, we think, be no doubt that when the orders issued by the Government during the past year have been completely carried into effect, hardly anything will remain to be done for the improvement of the diet of the troops.

G. O. G. G., 28th October 1853, and G. O. C. C., 11th November 1853.

"Since 1853, the daily ration of the soldier in India has consisted of the following articles, namely:—

Bread	1 lb.
Meat	1 „
Vegetables	1 „
Rice	4 ozs.
Sugar	2½ „
Tea	5/7 „
Salt	1 „

In

"In 1864, a few modifications in the quantities of some of these items were authorised. These will be alluded to hereafter; but it is desirable that, for the present, we consider the ration as it existed at the time the Royal Commission on the Sanitary state of the Army in India was sitting.

"The meat ration consists of beef during five days per week, and mutton on the two remaining, as had been the case for several years previous. The meat to be cut up in joints, the ribs and upper joints of the fore legs excluded. The bread to be of the best quality, and equal to that provided for hospital diet. The vegetables to be such as are procurable at different stations, and in different seasons. The ration of tea to consist, as a rule, of one-third green, and two-thirds black. Coffee might, however, be substituted for tea, in the proportion of 2 lbs of the former to 1lb. of the latter. G. O. G. G., 9th August 1844, and G. O. C. C., 23d August 1844.

"For the purpose of cooking this ration, a daily allowance of fire-wood, equal to 3 lbs. per man, was allowed. Cooking is performed by natives, who, as a rule, are men reared up from boyhood with regiments, and who, although actually untrained, understand nevertheless the particular taste of the soldiers, and are seldom unable, even under the most adverse circumstances of field service, to serve up a savoury and palatable, if not a very elegant meal. The means of cooking this ration were described before the Royal Commission as 'of the rudest order; a small square out-house, sometimes without a chimney, often far from clean, is the regimental kitchen. As for boilers and ovens, considered indispensable at home, there are none. A few holes to put the fire in, and moveable utensils to hold over them, are all that India thinks it wants.' The hours at which, as a rule, meals were served up, were as follow, namely:—7 to 8 a.m., breakfast; 1 p.m., dinner; 5 p.m., tea. There has hitherto been no modification in this scale, either according to season or according to station, except that inasmuch as the quality of the meat ration is in some parts of India much better than at others, and that European esculents and vegetables, which grow in profusion in some parts of the country, can in others be reared only in small quantity, the ration necessarily varied in this respect. Vol. I., p. 356.

"In regard to the dietary so constituted, the Royal Commission expressed the opinion that, with reference to the amount of work the soldier in India has to perform, it is injurious to his health; and the Government might try to induce the men, by varying the ration with reference to hot and cold weather, to use more vegetable diet and fruit, and less animal food.

"That the ration does not constitute the whole quantity of food consumed by a soldier daily, is well known to all regimental officers. There is, in fact, in almost all regiments a system of what is called extra messing, on account of which a sum varying from half an anna to two annas per man is daily stopped. From the amount of these stoppages, milk, curry stuff, eggs, spices for puddings, and other little articles of luxury are obtained, and the cooks paid. In fact, ample evidence to this effect is given before the Royal Commission. Thus, one witness informs that body that the soldier, especially if he be married, purchases salt, pork, or bacon in the bazaar; and adds that, if his family be large, he obtains fresh meat of an inferior kind. Another states that the men not unfrequently purchase bazaar pork and bacon, which, from the foul feeding of the animals, is unwholesome. Qs. 3134-3200. Qs. 2942 to 3036.

"Dr. Parkes gives, in a tabular form, the relative proportions of the alimentary constituents, in the ordinary diet of the soldier at home and in India, and from his tables the following have been prepared, namely:— Hygiene, pp. 144 and 564.

	At Home.	India.
	Oz.	*Oz.*
Of water	38·88	30·07
Nitrogenous Substances	3·86	4·36
Fat	1·30	1·38
Carbo-hydrates	17·35	14·47
Salts	·80	1·54
Totals	62·19	51·82

"It is clear according to this table that, as regards mere bulk, the ration of the soldier in India is very nearly one-sixth less than it is at home; in order therefore to exhibit the cause of this difference, it may be well to place in a table, side by side, the proportion of the

the above constituents stated to be contained in each ingredient of the soldier's diet. This is accordingly done in the succeeding Table :—

	Water.		Nitrogenous.		Fat.		Carbo-Hydrates.		Salts.	
	Home.	India.	Home.	India.	Home.	India.	Home.	India.	Home.	India.
Meat - - -	7·2	9·6	1·44	1·92	·8	1·07	–	–	·154	·2
Bread - - -	9·6	6·4	1·92	1·28	·36	·24	11·73	7·8	·312	·2
Potatoes - -	11·84	13·6	·24	·96	·02	·04	3·75	·93	·020	·11
Other Vegetables -	7·28		·16		·04		·46		·050	
Rice - - -	–	·4	–	·20	–	·03	–	3·33	–	
Milk - - -	2·92	–	·1	–	·08	–	·13	–	·016	–
Sugar - - -	0·04	·075	–	–	–	–	1·28	2·41	·006	·012
Salt - - -	–	–	–	–	–	–	–	–	·25	1·
Total - - -	38·88	30·075	3·86	4·36	1·30	1·38	17·35	14·47	·808	1·542

P. 564. "With reference to the constituents of the diets, Dr. Parkes remarks that it is slightly more nitrogenous in India, and less rich in starches; and he thinks that although no doubt it would be too much for a perfectly idle man, it would not be so were the amount of exercise that of the home standard. At page 145 of his work, already quoted, however, he thus expresses himself: 'The ration of the English soldier at home therefore appears to be deficient to a certain extent in albumates; to be very poor in fat and to be in excess in starches. The fresh vegetables are sufficient. It would be improved by the addition of some meat, or what perhaps would be better, two ounces of cheese, some fatty food, such as bacon, butter, or by greater use of oil in cooking; and by a larger employment of beans and peas.' He would also, with Robert Jackson, continue a ration of vinegar.

"Two important facts may here be noted in regard to the soldier's ration at home, namely, that according to the opinion of Dr. Parkes, it is in time of war quite insufficient; and that the articles in which he considers the ration is most deficient are precisely those which, as already observed, the soldier in India most seeks after, namely, cheese and fatty food, such as bacon. The circumstance is further of importance as illustrating a remark made by

Lewis, p. 65. Messrs. Lewis and Gilbert, to the effect that the underfed labouring classes manifest an instinctive preference to fat meat, such as pork, over those meats that are thinner and more nitrogenous.

Qy. 424, Royal Commission. "Numerous opinions of a conflicting nature, as regards the supposed superabundance or deficiency of the soldier's ration in India, have been given; thus Colonel Swatman considered it was not enough, and that in damp climates experience taught that men should be better fed.

Qs. 3512 and 3540. "According to Dr. Reed, men should be well dieted, the appetite being capricious, and he adds his reason for this opinion, to which special attention ought to be given, namely, that 'the waste of constitution being greater in hot climates, the diet should be more nutritious.' No doubt here he means, more easily assimilated.

Qs. 3895 and 3900. "Again, Brigadier General Russell, C. B., stated that the 84th Regiment, when in Burmah, had a contract for 8 oz. of mutton and 4 oz. of bread beyond the regular ration.

Para. 89 of Proceedings. "The medical member of the Commissariat Commission in India believed that an increase of the meat ration to the extent of ¼lb. in the cold weather would tend more speedily to recover the men from the prostration entailed by severe heats, and render them more capable of enduring the fatigue required of them during the drill season.

Ind. An. for 1858, p. 106. "On the other hand, Dr. Macnamara has found fatty and otherwise diseased liver to a great extent among men thus overfed; and attributes these diseases to the circumstance of the men being overfed. While the opinion given by the Commissariat Commission seems

Para. 245, page 63. merely to express that that body considered the ration authorised by Government, if properly carried out, is sufficient to preserve the soldier in health and vigour, and is on a more liberal scale than exists in any other part of the world.

"This Commission does not seem, however, to have noted the fact that in our Colonies the soldiers have the advantage of an occasional salt ration, which in India they have not,

Vol. II., Appendix to Proceedings of Royal Commission on India, p. 185. although evidence exists which indicates the advantage of such a variety; thus, it is on record that in Burmah, soldiers and sailors were employed on the same expedition inland. The former had 16 oz. of lean tough beef, the sailor 9½ oz. of salt pork. Here the sailor, although exposed to the climate night and day, while the soldiers were well housed, suffered less from climate and disease than the latter, who, it is said, looked with longing eyes on the pea-soup and plum puddings which the sailors cooked just as if they were on board ship.

"The

"The opinion of the President of the late Cholera Commission on this subject, is thus given: 'The quantity of meat allowed daily to the soldier has often been declared by high medical authorities to be too great for a tropical climate, and it has been recommended that the meat ration should be diminished during the hot season, vegetable food being substituted. I believe that almost all that is said upon this subject is purely theoretical, and quite valueless for any practical purpose.' App. J., Commissariat Commission Report, para. 24.

"So also in reference to the implied dependence of hepatic disease among soldiers in India, to the quantity of meat they consume during the hot season, it may be well to note that Dr. Hooker found that herbivorous animals brought to the plains of India from elevated and therefore cold ranges, speedily became affected with similar affections. Hooker's Travels in Sikkim.

"An argument is often brought forward that the habits of natives of particular countries, as being the best for the circumstances of these people, ought to be adopted by foreigners, and there are not wanting men of very great eminence who strenuously advocate this doctrine. It seems, however, a somewhat dangerous principle to attribute the habits of any particular country to the effects of climate alone; we know in fact that not only climate, but religious prejudices, agricultural capabilities of the country, and financial prosperity or otherwise of the people, combine with more or less force to establish these habits. Thus we find natives of corresponding latitudes have very different habits as regards animal food: thus the aborigines of tropical Africa are large eaters of flesh, and those of tropical China, instead of living, as does the poor Hindoo, on cereals with or without additions as the latter can afford, devours enormous quantities of the fattest of fat pork, geese and ducks.

"Nor is it always safe to assume that because the mass of a people adopt a particular dietary, it is therefore the best suited to their personal requirements as regards health; far less to the requirements of foreigners residing temporarily among them; thus thousands of Irish subsist chiefly upon potatoes and milk, millions of Hindoos on rice and rancid butter.

"As to the effects of this defective diet upon the Irish, Dr. Carpenter states that the races who are restricted to it have, within a period of 200 years, degenerated so as to be now of low stature, to have pot bellies and bow legs; whilst their open projecting mouths, prominent teeth, exposed gums, advancing cheek bones, and depressed noses, bear barbarism in their very front. And with regard to the Hindoo, Lewis informs us that large as is the stomach of the ryot, it could not with impunity take in and digest the quantity of rice which would be sufficient day by day to supply the wants of the system; and that, unless one-fourth to one-third of pulse or dried fish be added to supply the nitrogenous elements, these people become diseased, acquire pot bellies, and show signs of starvation in every feature. The fact is notorious that so soon as the pecuniary condition of the Hindoo begins to improve, he indulges in such quantities of fats, such as clarified butter and vegetable oils, as his finances afford; thus as far as practicable adopting the same nutritious elements as exist in a different form in the food of the soldier. Manual of Physiology, para. 420. P. 58.

"But whatever theory may suggest in respect to this matter, we find in reality that the soldier in India will absolutely refuse to exchange the habits in which he was reared for those of the natives by whom he is surrounded. 'As a matter of fact,' says Mr. Strachey, 'Europeans are no more inclined to adopt a vegetable diet in India than they are in Europe.' 'Bread and fruit and vegetables are generally in India of indifferent quality.' 'Not very palatable.' 'And although it may be true in theory that we all eat too much animal food, we feel in practice that we shall eat it or nothing.' 'European appetites in India during extreme heat are constantly in an abnormal state, and more or less capricious, and it is useless to place people upon a diet which they dislike, however excellent it may be theoretically. It must be added, that the hot and rainy season, when meat is supposed to be especially objectionable, is the very time when there are hardly any vegetables which an Englishman can eat.' Appendix J., para. 24, p. 6. Report of Commissariat Commission.

"Let us now consider how far the purely chemical theory of food is to be trusted. Mr. Lewis informs his readers that a great mistake is made when it is imagined that the nutritive value of foods can chiefly reside in the amounts of carbon, nitrogen, oxygen and salts which they contain. It resides, as he well observes, in the relation which the several substances bear to the organism they are to nourish; thus, the indications of chemistry in regard to the relative values of food are often at variance with the results of experience. For example, he mentions that wheat contains only 2·3 per cent. of nitrogen; beans, 5·5; lentils, 4·4; and peas, 4·3; and yet, wheat is in reality superior in nutritive value to beans, lentils, or peas. P. 40. Phys. of Common Life.

"So in regard to the often repeated assertion that in a cold climate, the carbonaceous or respiratory elements are most requisite, and in a hot, the nitrogenous. He informs his readers that the Sicilian and Neapolitan eat more oil than the Swede; that according to theory the Hindoo should eat very little non-nitrogenous food; whereas, according to fact, he eats very little nitrogenous food, and a great deal of heat-making food. P. 40.

"But even granting that the chemical theory is so far correct that recent waste of tissues requires to be met by nitrogenous elements of food, there is sufficient in the circumstances of the soldier's existence in India to justify his being supplied with a liberal ration of this description.

"It is true that he does not, as a rule, undergo the same amount of bodily exertion as he does on home service. It is no less true, however, that destruction of his tissues takes place with a rapidity unknown in temperate climates. Nitrogenous matters in the form of the salts eliminated in perspiration are plentifully discharged by the skin as well as by the other

ordinary channels; muscular fibre becomes lax and fatty, and the process of wear and tear, although not amenable to chemical tests, proceeds with a rapidity and to an extent unknown to be produced by the greatest bodily exertion in a temperate climate. Hence, on this ground, if nitrogenous food be intended to supply the expenditure of tissue, a liberal allowance of it is indicated in India. But it is not only nutriment that the system demands; a certain amount of bulk is necessary in order that digestion may proceed; hence experience shows that when food is nutritious in its character but of small bulk, advantage is obtained from mixing it with more nitrogenous substances in order to give it bulk and solidity. Nor must we forget that in regard to food, original tastes and habits exercise a most powerful influence upon the soldiers, as indeed upon all other classes, and that to effect a change in these, even were it otherwise practicable to do so, would not be effected without much personal inconvenience and even injury to individuals.

Carpenter's Manual of Physiology, para. 485.

"Various circumstances which may be looked upon as exceptional combine to render the question of rationing troops in India a matter of more than usual difficulty.

"Thus, in regard to meat, the fact is to be noticed that breeding of cattle for shambles forms no part of the occupation of the Hindoo; and the prejudices of the people are opposed to their being reared and sold for slaughter. The demands of agriculture, too, and for transport of produce, are so great that a scarcity of cattle in some parts of India already exists. For several months in the year fodder and grass are scarce. The natives have not yet learned the art of improving breeds of cattle. The animals supplied to meat contractors, if not so young as to be immature, and their meat thus wanting in the full proportion of nutritive elements, have been severely worked in the cart, or at the plough, while their food has been insufficient in quantity and often deficient in nourishing qualities. Hence, as might be expected, the flesh is dry, fibrous, tough, deficient in gelatinous matter, and wanting in aroma. Indeed, Dr. Chevers is of opinion that unless well and carefully fed, the flesh of oxen and sheep is unwholesome.

Health of European soldiers, p. 112.

"Nor is it at all times certain that the soldier receives the full amount of his ration, for Mr. Strachey states that 'of the frauds of the contractors in this respect he himself saw an example at Meean Meer. Merely by cutting off a smaller quantity of bone than that permitted by regulations, the contractor saved 16 lbs. of meat from each carcase,' thus giving the contractor a profit of 20 lbs. from one regiment.

Appendix J., p. 6, para. 24 of Presidency Commissariat Commission.

"Mutton is poor, thin, and unpalatable; nor is this all. Sheep in India, contrary to their nature in Britain, are known to be sometimes fed upon matters little, if at all, less filthy in their nature than those that constitute the food of pigs, and the latter, as is now well known, are brought up on food so loathsome in its nature that tape-worm and other diseases are rapidly engendered in those who partake of their flesh. In fact, so well was this known several years ago in India, that in 1858, its use by soldiers was prohibited.

A. G. H. M's. Force, Circular, 9th July 1858.

"The Commissariat Commission took into its serious consideration the practicability or otherwise of improving the quality of the soldiers' rations in India. They considered the question in its financial bearings, and have entered into some particulars that may be of interest, as showing the enormous expense incurred by the mere dieting of troops in the Bengal Presidency,

Para. 81, page 24.

"By the Report of this Commission, it appears that the sum actually paid by the soldier in India for his ration is at the rate of *Rs.* 6. 5. 4. per month, whereas its actual cost to Government is *Rs.* 9. 5. $5\frac{1}{5}$., making a cost per annum of above 175,000 *l.*

"Were cattle and sheep to be stall fed, a period of six months would be required to effect sufficient improvement in them to render the measure of any use, as it appears that for some time after animals experimented upon have been submitted to the process their condition actually falls off. This then would occasion an extra expense of not less than 187,674 *l.* 18 *s.* per annum; or, in all, to supply the troops with stall-fed meat, 111,009 head of horned cattle, and 195,590 sheep, at an aggregate cost of 362,674 *l.* 18 *s.* would be required; which, for an approximate strength of 39,000 effectives, would give 9 *l.* 4 *s.* per man per annum for meat alone.

Para. 91, page 26.

Para. 89, page 26.

"It may be here noted that, with reference to the proposal made by some officers that the soldier should during the cold season have $\frac{1}{4}$ lb. of meat beyond that now allowed to him, the Commission calculated its cost to amount to 12,099 *l.* 14*s.*, an expense, according to the Report, 'the necessity of which is not sufficiently apparent to induce the Commission to recommend it.'

"The bread issued to soldiers has of late years undergone very great improvements, and further improvements in its quality are contemplated. The 'Sojee' from which it is manufactured contains a considerable amount of gluten, and the juice of the palm tree having been often used in substitution of yeast, the loaves were during the hot and damp weather liable to become sour during the after portion of the day.

Appendix to Commissariat Commission, Report J., page 5, para. 22.

"The supply of good vegetables to the troops is a difficulty, which it is far from easy to get over. During the hot weather and rains there are almost no vegetables that Europeans care to eat. With the exception of potatoes there are very few vegetables, either European or Native, which the soldiers think worth eating, and a large portion of the vegetable ration is never consumed by them. The Commissariat Commission allows that there is a period during the hot weather and rains when no arrangement can secure even a ration of potatoes for the soldier; the heat and damp of the climate being such as to render their transport through the plains so wasteful as to be practicably impossible. The same Commission reports that, from 15th June to 15th October, potatoes are not considered wholesome; and gives a list showing in detail the stations and divisions at which the greatest difficulty is experienced in procuring a supply. According to that list, it would seem that in the Cawnpore and Lucknow Divisions potatoes are only procurable during the months from July to November

Para. 210, page 55.

November inclusive, by being brought from the hills at a loss of 50 per cent. At Meerut they are unwholesome and unfit for food from 15th June to 1st October; at Lahore they are not eatable in July and August; at Sealkote, not obtainable in July, August, and September; at Peshawur, not obtainable in July and August; while at Mooltan the supply is impracticable in August, September, and October; and at the Hill Stations of Kussowlie, Subathoo, Dugshai, and Jutogh, potatoes are not good from June to September inclusive. With reference to these observations, however, it may be noted that at the Hill Stations named, various European vegetables are in season during the time that potatoes are not procurable, and that the daily extending facilities afforded by the railway are rapidly diminishing the difficulties here complained of. For example, in 1863, potatoes were issued throughout the whole year to the troops at Mooltan. Appendix 2.

"It now becomes necessary to give a brief summary of the measures that have from time to time been taken by the Government of India, and by his Excellency the Commander-in-Chief to effect the greatest amount of improvement in the victualling of the soldier that the circumstances of the country rendered practicable.

"With regard to the general subject of rations, the following are the more important of the measures that have been promulgated.

"In 1861 the then Commander-in-Chief observed that in almost every corps the messing of the soldier was not sufficiently attended to. His Excellency therefore directed that the utmost attention should be paid to it; that officers should use their endeavours to induce the men to expend a small sum towards bettering their ration, and that commanding officers should see that the articles provided are of good quality. A. G. Circular, 24th July 1861.

"In 1862 a Special Commission was formed under the orders of Government to inquire into and report upon the entire question of rationing the troops. In 1864 the conclusions at which it arrived were published, and such of them as were approved by Government directed to be adopted. On this occasion Government endorsed the opinion expressed by the Commission that the ration was itself sufficient, and that any assertion that may have been made that the health of the troops had suffered from defect in quantity or quality of food was without foundation. It approved the suggestions that Commissariat officers be themselves responsible for the quality of rations; that fair and remunerative rates be paid for meat of all kinds, the better to encourage competition; that to prevent undue pressure being put on the supply of mutton, the troops have a ration of it only once a week; and that to prevent the destruction of brood stock, not more than one-third of the sheep killed for rations be ewes. G. O. C. C., 13th May 1864.

"The only modifications that appeared necessary were that, with reference to the large quantity of rice allowed to the soldier, an equal quantity of flour be substituted for it at the option of the soldier; the arrangement being made for a fixed period of not less than fifteen days at a time. That for the future the entire ration of tea consist, as a general rule, of black. That the daily allowance of salt be reduced to two-thirds of an ounce. That to enable the soldier to have a cup of tea or coffee in the early morning, arrangements to be made with regimental canteens so as to ensure good and clean utensils for the purpose. And that a store of groceries be kept on hand by each regiment, equal to fifteen days' consumption. Orders were issued to the effect that the breakfast hour for the soldiers should be 8½ a. m., dinner at 2½ p. m.; those who desire to have a pint of beer, to have it issued to them so as to be taken at the same time; and that the time for tea should be immediately after evening parade: these hours to be adhered to throughout the year. A. G. Circular, 161 E., 16th December 1864.

"Proposals have been submitted that cooking be performed under the superintendence of trained Europeans, and that kitchens, with all necessary appliances, be built; and the Public Works Department have had this matter referred to them in view to the necessary plans being prepared. Standing Orders, May 1864, p. 95.

"With a view to obtain an improved meat ration, the Commissariat Commission recommended that the slaughter-houses be visited by the sanitary officer at least once a fortnight; and that, as was the case from 1822 to 1853, a qualified non-commissioned officer be appointed for the purpose of inspecting the issue of fodder, and attending to all matters connected with the selection and slaughter of cattle required for the meat ration. Para 287. G. O. G. G., 25th October 1822, 704, 9th September 1853. G. O. G. G., 136 of 6th February 1865.

"And in order to effect improvement in the bread, it has been recommended that it be henceforward prepared by Commissariat Agency; that instead of being made as heretofore from soojee, it be made from flour ground in proper mills; hop and potatoe yeast being substituted for palm juice, and Stephen's Kneading Machines brought into use. Also that proper bakeries be erected, and Bovell's Blast Mills imported for the purpose of grinding the flour. With reference to this recommendation, it is right to record the fact that early in June 1865, the writer of this memorandum tasted a loaf prepared from country flour, as recommended by the Commission, Colonel Macpherson, C.B., Commissary General, having had samples sent to him from Dinapore. This sample was sweet, light, well-raised, and although kept during two days in the moist heat of Calcutta, perfectly fresh and very palatable at the end of that time. So far, then, the experiment has been a success. Para. 346. Report of Commission.

"The custom has hitherto been to give as substitutes for vegetables, dhall, that is, ground pulse, when indigenous vegetables were not procurable; but so long as these could be obtained, they were looked upon as sufficient substitutes for potatoes. Neither of these, however, are, anti-scorbutic, and could not be looked upon as substitutes for such vegetables as have these properties. Hence, there has never been any doubt as to the desirability for arrangements to secure to the soldiers greater variety than they had hitherto enjoyed in regard to this important portion of their ration. Various measures have from time to time been proposed with a view to obtain for the soldier an improved supply. In Qy. of Royal Commission, 1432-1458, 1523, 1524. G. O. C. C., 3d April 1860.

1860, the supply to regiments of seeds of English and country vegetables was sanctioned fo soldiers' gardens. In 1864, further instructions on the same subject were given in orders, and authority given for the supply of vegetable seeds on requisition: the English vegetable seeds to consist of cauliflower and lettuce, the indigenous of the egg plant, and pumpkin. In September of the following year a Government General Order directed, among other points, that steps should be taken at particular stations to show the probable quantity of vegetables of different kinds that could be supplied during each month from soldiers' gardens, to fix a suitable price to be paid to the soldier for these, and to determine, if the supply from this source cannot be depended upon, what description and quantity can be obtained from other sources during the different months. With a view, as far as possible, to encourage the cultivation of those vegetables held in greatest esteem by the soldier, Government has adopted the suggestion of the Commission, that fairs be held and prizes awarded for the best specimens exhibited; and also that, as far as practicable, vegetables shall be raised in gardens attached to gaols; being purchased from these by the Commissariat Department so long as the arrangement shall not interfere with the interests of contractors.

G. O. C. C., 5th July.

7th September, published in G. O. C. C., 8th October 1860.

"A recommendation has also been submitted by several Commanding and Medical Officers that cruciferous vegetables be pickled during the cold season and issued during the hot. The Commissiariat Commission, however, does not support the suggestion, although the grounds upon which they refuse to adopt it do not appear. In the dietary of the Russian soldier, pickled vegetables form an important item, as do other anti-scorbutic ingredients, and, as Dr. Parkes observes, we might take a lesson from the Russians in this respect.

Para. 211.

Practical Hygiene, para. 142.

"The ration he thus alludes to contains, black bread, 1 lb.; meat, 1 lb.; Kawass, *i.e.*, fermented drink, 1·1 quart; sour cabbage, 3½ gills; barley, 3½ gills; salt, 1½ oz.; horse radish, 4 grains; pepper, 4 grains; vinegar, 1¾ gills. All authorities agree that variety in the nature and description of food is absolutely necessary for the due maintenance of health; and that the necessity for this was acknowledged in India prior to the date of the Commissariat Commission is apparent. From the circumstances of the country, however, difficulties have ever existed in obtaining for the soldier that variety which at home and in the Colonies is readily available. The Commission had its attention specially drawn to this important matter, and among its recommendations that have received the sanction of Government is, that greater attention be paid to the variety of food, to the mode in which the men's meals are served up, and that messes be put upon a more becoming footing.

Paras. 300 to 305 of Commissariat Report.

"So long ago as 1860, the Commander-in Chief expressed a desire that salt pork should be retained in store, so as not only to be available for issue, on occasions of the ordinary meat ration being condemned, but to afford the men an agreeable variety in their diet. The Commissariat Commission, however, did not support the recommendation, although evidently upon financial and not sanitary grounds.

A. G. to Military Secretary to Government, No. 97A, 23d September. Paras. 108 to 112 of Report.

"A scheme was in 1861 and 1862 laid before the Government of India by the Finance Department, the object of which was to show that changes in the diet of men might, without extra expense, be introduced, provided the Commanding Officer and Commissariat Officer were to make their arrangements in concert. In this way salt meat, fish, butter, cheese and condiments of different sorts might be supplied either directly by the Commissariat, or the money value of rations that men did not want might be made over to the regimental authorities for the purpose of being expended upon articles of food that were agreeable to the men.

Letter to Secretary to Government of India, No. 566, 6th August 1861, quoted in App. 2, to Presidency of Commissariat Commission.

"In 1863, the Commander-in-Chief, with the concurrence of Government, announced that arrangements might be made with Commissariat Officers for decreasing for a time the soldiers' ration of meat, when the Commanding and Medical Officers considered such a change necessary, and the sanction of his Excellency shall have been received for the arrangement being carried into effect. It does not appear, however, that, up to the time this paper is being written, this recommendation has been in any instance acted upon.

G. O. C. C., 14th September.

"The Commissariat Commission having the same object in view laid down what they deemed the best means of variety. This consisted in serving up on different days the dinners cooked in particular ways. Thus these meals would be as follows, namely:—

1st day, soup and boiled meat.
2d day, pies and curries.
3d day, baked joints with potatoes under them.
4h day, soup and meat salted with Carson's machine, dhall or peas pudding.

"Very lengthy instructions in regard to cooking were published in 1863 by order of his Excellency the Commander-in-Chief. Among the recommendations therein contained are the establishment of regular messes among the men, and the appointment of soldier orderlies to superintend the cooking.

A. G. Circular, No. 75-91, 13th June.

"Detailed instructions are also given in regard to how a variety of dishes are to be prepared. A bare enumeration of these dishes is all that can be given here, namely,—

a.—A ration of beef, onions, rice and pumpkins for 60 men.
b.—A ration of beef, onions, rice and sweet potatoes.
c.—A ration of beef, onions, and yams, with curry powder added.
d.—A ration of beef, rice, and yams, with pepper and flour.
e.—A ration of salt beef and yams.
f.—Salt pork.

g.—To boil greens or spinach.
h.—To dress pumpkins and cucumbers.
i.—To make tea and coffee on the line of march.
j.—To make coffee.
k.—To prepare soup.
l.—To make a plain pudding.

"Regimental medical officers have from time to time recommended that in order to give variety to the diet of troops, the cooking be varied by haricot stews, salt ration, puddings of sago or arrowroot, and that, where fruits are obtainable, they have these in a dried or fresh state.

"There are few circumstances under which a good wholesome soup may not be prepared in India, and this, if it contain barley and vegetables, will always serve for a large portion of one meal, and, as observed by Sir George Ballingall, besides the various kinds of cabbage, carrots, turnips, &c., the produce of the garden, there are various kinds of cresses, sorrel, and other vegetables growing wild in the fields, which make no unwholesome or unpleasant additions to soup. Doubtless to select these would require a knowledge and great interest in the subject on the part of officers; yet that such a variety may be, under certain circumstances, obtained, is daily evinced by troops of the French army, and the medical history of the recent war in America indicates that such was also the case in that country. Military surgery, p. 40.

"The system of extra messing should, according to the suggestion of the Commission approved by Government, be encouraged, the sum so charged being laid out on the purchase of milk, puddings, fruit, cheese, spices, &c. These articles could, as in the case of the 35th Foot, be obtained from a morning market established in the vicinity of the barracks, and under the superintendence of the regimental authorities. In 1863 his Excellency the Commander in Chief issued instructions in regard to this subject, directing that orderlies be appointed from companies, as is the custom at home, and that the duties of these men shall be to purchase such articles of extra messing as will give the men considerable variety of diet, such as butter, milk, eggs, fowls, &c. A. G. Circular, 13th June.

"It will be seen, from the foregoing remarks, that the means for improving the rations of the soldier in India have obtained the best consideration by the Government of India, and by his Excellency the Commander in Chief; and that in reality little if anything further is required than that the recommendations and orders laid down on the subject during the past year be carried out.

"The one great difficulty which for the present stands in the way is that of procuring, during several months of the year, a supply of the vegetables that soldiers would use. It is feared that some considerable time must elapse before this can be effectually removed, but, in the interim, much may be done by local arrangements to meet the difficulty. The rapid extension of railways may also be taken advantage of to convey vegetables to distances that were formerly impracticable, and although compressed or pickled vegetables are not a complete substitute for those in a fresh state, it is beyond doubt that they are very valuable adjuncts to diet, and as anti-scorbutics. Every endeavour should, therefore, be made to obtain a supply of them.

"At some stations, for example Mooltan, lime-juice has been issued with the greatest benefit during absence or scarcity of succulent vegetables, and similar good results would doubtless accrue at other stations, where vegetables are at times unprocurable.

"The following are the principal recommendations made by various authorities on the subject of improving the rations of soldiers in India, in regard to which action has already been taken, and the complete adoption of which is deemed desirable, viz.:—

1. That soldiers be encouraged to expend a small sum on extra messing, and orderlies appointed by companies, as at home, to purchase such articles as are likely to be relished.
2. That the responsibility for the quality of the rations rest entirely upon the commissariat officer.
3. The appointment of a non-commissioned officer to superintend the feeding of cattle and attending to the shambles.
4. That arrangements be made to enable the troops to have a cup of tea or coffee before going to parade.
5. That, as at present ordered, a small stock of groceries be kept on hand by regiments.
6. That the hours for meals continue as at present, viz., breakfast at 8½ A. M., dinner at 2½ P. M., and tea after evening parade.
7. That the bread be baked at all stations under commissariat agency; that flour be used, and proper yeast employed, the flour being ground in suitable mills, the dough kneaded by machinery, and proper bakeries erected.
8. That the cultivation of vegetables in gardens connected with gaols be as far as practicable carried into effect.
9. The encouragement among soldiers of cultivating vegetables, by paying them for such quantities as they raise, and by holding exhibitions.
10. That greater attention be paid to the manner in which soldiers' meals are served up, and that messes be put upon a proper footing.
11. Various rules have been laid down for cooking different kinds of dishes from the ordinary ration of the soldier, and such items of extra diet as are available to him; and these, if carried out, would doubtless afford him much of that variety which has been hitherto unobtainable.

"Various other recommendations have been made by the military authorities, by the

Commissariat Commission, and by officers of standing. Some of these have partly been acted upon; others have not been formally brought forward, or, if they have, do not seem to have attracted particular attention.

"Undoubtedly, however, their adoption would in some instances tend much to perfect the improvements in the rationing of the soldier, in so far as this is practicable. The points alluded to are as follow, viz:—

1. That properly fitted kitchens be erected, and suitable cooking vessels supplied.
2. That trained European cooks be appointed to regiments.
3. The recommendation, that arrangements be made for compressing or pickling vegetables, although it does not emanate from the Commissariat Commission, appears of great importance, and one which, if carried into effect, would be productive of very beneficial effects.
4. The issue to the soldier of an occasional ration of salt pork does not form one of the recommendations of the Commissariat Commission, yet the measure is one which on sanitary grounds commends itself.
5. The optional change of a certain portion of meat for an increased quantity of bread which, under certain circumstances, has been made practicable, has not apparently been taken advantage of by the soldiers. Hence there is reason to doubt if they feel the necessity for it.
6. As one of the most important ingredients of good soup is barley, soldiers ought to have facilities of obtaining it whenever they choose.
7. That fruits, dry or fresh, be allowed, wherever practicable, to the men.
8. That when vegetables, either fresh, preserved or pickled, are not procurable, the soldiers have the advantage of obtaining lime-juice."

Cooking.

65. There has been much difference of opinion regarding the plans of cook-houses that ought to be adopted for barracks and hospitals, and regarding the arrangements for cooking. A series of experiments has been ordered by the Government to be carried out, which, it is hoped, will afford the means of disposing satisfactorily of the whole subject. The provision of cook-room furniture on a fixed scale has been ordered. Although there is still much room for improvement in the cooking in this country, there can be no doubt that when regimental arrangements are good, the men are, upon the whole, better fed; so far, at any rate, as the quality and variety of cooking are concerned, than they are at home. This, however, only applies to the men in barracks. The cooking in the hospitals is very often unsatisfactory. The question is now under consideration of extending to all British regiments in India the system of appointing cook sergeants who have obtained the Aldershot certificate of qualification, and have undergone the prescribed probation.

Slaughter-houses.

66. The construction of proper slaughter-houses has been ordered at all stations for European troops, and the principles have been laid down by the Government according to which all slaughter-houses are to be in future constructed, or which are to be attended to in modifying existing buildings of the kind.

Sale of unwholesome food in cantonments.

67. The rules and regulations proposed by our Commission for the sanitary administration of military cantonments will, if they are put in force, give the means of enforcing all measures that are necessary for the prevention of the sale of unwholesome food in cantonments. They provide for the constant and vigilant inspection of all food and drink offered for sale, and for the seizure and destruction of all such food or drink as may be unfit for human consumption.

We have addressed the Government in a separate report regarding the necessity of preventing the sale of unwholesome pork, which, there is reason for supposing, is sometimes the cause of serious disease. The disgusting but common practice of deliberately feeding not only pigs but sheep and cattle upon filth of the worst description has been brought to the notice of the Government, and measures have been taken for preventing it in our cantonments and in places under the direct control of Government officers. These practices are an evident cause of danger. It has been conclusively proved by the researches of modern science that the serious diseases caused by the presence of *Tænia* or tape-worm, of *Trichina Spiralis*, and of other parasites, owe their origin to such causes as this. It has been proved in Europe that a large amount of formidable and fatal disease, presenting symptoms apparently similar to those of typhoid fever, and of other serious diseases, have been in reality due to the presence of *Trichina*. This dangerous parasite has been observed by Dr. Fayrer in a European patient in one of the Calcutta hospitals, and it has been suspected that it may have been the cause of serious disease which has been recorded under other names. The necessity of measures for the prevention of diseases of this class has been strongly insisted on in Europe, and there is no doubt that the filthy practices to which we have alluded render such measures still more necessary in India.

68. Other

Supply to the European troops of aerated drinks and ice.

68. Other subjects connected with the question of the food and drink supplied to the troops have been under consideration during the past year. Among these may be noticed the arrangements for supplying aerated drinks, such as soda water, lemonade, and ginger beer. The consumption of these is extremely large, and if care be not taken to supervise their preparation, they are sometimes very unwholesome. Measures have been proposed by which it is hoped that an ample supply of wholesome beverages of this kind may be provided for the soldiers at a cheap rate. The means for cooling water and other drinks are also very necessary. The use of machines for the manufacture of ice is gradually extending in India, and we may reasonably expect that these will before long be furnished at a price which will often make it possible to supply ice to the troops. One of these machines has been purchased by the Government, in order that an experiment with this object may be tried. Ice has already been supplied, to a considerable extent, to the regimental hospitals. We believe that nothing would have a more powerful effect in diminishing the consumption of spirituous liquors by the men in the hot season than the supply of iced water and aerated drinks. Ice in a tropical climate is not a mere luxury, and there can be no doubt that its use, which has greatly extended during the last twenty years, has been of great benefit to the health of those classes of the European community which have been able to obtain it.

Diet tables, cooking, and attendance in hospitals.

69. It was recommended by the Royal Commission that the hospital diet tables in use at home stations should be adopted in India as far as practicable. This had already been done before the report of the Commission was issued. During the past year further improvements have been made, and the permanent adoption of the revised diet scales has been ordered. The new tables are more elaborate than those in force at home and in the Colonies. The arrangements in the hospitals in this country are certainly in many respects in an unsatisfactory condition, and they are for the most part very inferior to those which exist at home and in the Colonies. There is a deficiency of many things required for the comfort of the sick, and which are supplied in all civilised hospitals; the cooking is often very bad; and there are no properly trained attendants. The last subject is one of much importance, and it was specially noticed by the Royal Commission. On these matters we hope soon to submit a separate report to the Government.

Female nursing in general hospitals.

70. The Royal Commission noticed in its report the necessity of introducing female nurses into all large general hospitals in India.

A satisfactory commencement in carrying this out has already been made. In the General Hospital, and in the Medical College Hospital in Calcutta, the two principal institutions of the kind in this Presidency, female nurses have been employed during the last four years with great benefit. They have supplied, to use the words of Dr. Chevers, a great want, and have been of inestimable value to the sick. These nurses have been under the management of the Calcutta Hospital Nurse Institution, a body supported principally by private subscriptions, with the assistance of a monthly contribution from the Government. The Sanitary Commission has been in communication, during the past year, with the committee of the institution with the object of determining the manner in which the advantages of female nursing in hospitals can be extended to the greatest practicable extent. We submitted to the Government of India the following general propositions:—1st. That in all large general hospitals maintained by the Government, the introduction of nursing by females is necessary; 2d. That whatever expense it is necessary to incur for this purpose, should be met as willingly as that of the other establishments organized for the care and treatment of the sick. The principles involved in those propositions have been admitted by the Government, and the Commission hopes to be able before long, with the assistance of the committee of the Calcutta Hospital Nurse Institution, and of the Medical Department, to submit a complete scheme for the orders of the Government. In this work the Commission will have the benefit of the advice of the highest living authority, Miss Nightingale.

During the past year another step has been taken towards the more general introduction of female nursing. The Government of India has sanctioned the provision of nurses for the female wards of all regimental hospitals, and it is hoped that plans may be devised for their proper training in combination with the scheme to which reference has just been made.

Establishment of general hospitals at large stations.

71. The organization of general hospitals at the principal European stations was

was recommended by the Royal Commission. On this subject we propose to submit a separate report to the Government.

Supply of ambulances.

72. Another subject of importance which has lately been under the consideration of Government, and which may properly be noticed in this place, is the supply of ambulances for the transport of the sick. Hitherto these have been little used in India. The opinion has been generally expressed by the highest authorities that however advantageous it may be to supply ambulance waggons in addition to the doolees that are now allowed, it will only be on ordinary marches along good roads that it will be desirable to substitute ambulances for doolees as the means of transport for the sick. On an ordinary line of march there can be no doubt that a large proportion of the sick may conveniently and economically be carried in ambulances, but they cannot safely be depended upon for troops on field service. Ambulances are already supplied at most of the principal stations for the purpose of taking out convalescents in hospital for an airing. Elephants are frequently employed for the same object when the patients are able to bear the motion.

Rationing troops on board ship.

73. The system of rationing troops on board ship has been altered during the past year. The Admiralty scale of victualling for men, women, and children, in health, and for invalids, and of medical comforts, &c., laid down in Her Majesty's Regulations, has been adopted by the Government of India, with this modification, that no spirits are to be issued except under the orders of the officer in medical charge of the troops, porter being issued instead.* This has been the practice followed by the Government of India since 1859. A recommendation that this should be ordered was made in the Report of the Royal Commission under the erroneous impression that a different system was in force.

Reduction in amount of spirits issued from canteens.

74. One of the most important measures taken during the past year was the reduction of the amount of spirits issued daily to the soldiers from canteens. The former practice has been fully described in the Report of the Royal Commission. The following extracts show the reasons for which it has been followed, and the conclusions of the Royal Commission upon the subject:—

"According to existing regulations, every soldier has a right to purchase, at his regimental canteen, two drams of spirits of good quality, generally rum or arrack, supplied by the commissariat; or he may substitute malt liquor, wholly or partially, for spirit. The quantity of malt liquor issued in lieu of spirit varies in different regiments, but generally it appears to be a quart in lieu of a dram. * * * The whole tenor of the evidence goes to prove that the consumption of ardent spirits by the troops is a very potent cause of disease in India, and that much benefit to the efficiency of the Army would accrue from discontinuing its use, if it were practicable to do so. It is upon the practicability of effecting this great reform that the whole question turns. The use of spirits habitually is an acquired taste, which after a time becomes confirmed. The habit exists throughout the British army, and is carried with it to every station at which it serves, whatever may be the climate or its dangers. It is this depraved taste which lies at the root of the whole matter, and which renders it so difficult to deal with the question. * * * At most foreign stations, and throughout the whole of India, it has been considered advisable to permit the sale of ardent spirits, under restrictions as to quality and amount, in all canteens; because bad, adulterated, and, in some cases, poisonous spirits only could be otherwise obtained by the soldier. The permissive authorised sale of spirits, the use of which by the troops we have shown to be an indirect cause of a large amount of disease and mortality, thus becomes a direct encouragement to intemperance and disease, while its avowed object is to prevent disease by supplying men with a less injurious spirit than they could otherwise obtain." The conclusion of the Royal Commission was, "that the sale of spirits at canteens should be discontinued, except in specific cases on the recommendation of the medical officer, and only malt liquor or light wines allowed; and that the sale of spirits in military bazaars be made illegal, and, as far as practicable, suppressed." The opinion is, however, stated in the body of the report, that "any change would have to be gradually introduced, beginning with young soldiers, and discouraging to the utmost the use of spirits, until the stigma of spirit drinking be wiped off from the British army."

Under

* Secretary Government of India, to Quartermaster General, No. 391, dated 25th July 1864.

Under the General Order issued by his Excellency the Commander in Chief, Sir Hugh Rose, on the 21st June 1864, the issue of rum from canteens was reduced from two drams to one dram daily per man. The time has not yet arrived at which we can form a judgment regarding the actual results of this change, but they can hardly fail to be ultimately beneficial, and it may be anticipated that these measures will be followed hereafter by others of a similar character. The cost to the State of this reform has been serious, because it involved the necessity of increasing the supply of malt liquor, which is furnished to the soldiers by the Government at a rate below the actual cost. In the Memorandum of the Accountant General, Military Department, dated 27th March, 1865, annexed to Sir Charles Trevelyan's Financial Statement for 1865-66, it is stated that "the increased consumption of malt liquor, chiefly caused by the reduction of the issue of spirits, involves an addition of no less than *Rs.* 22,87,861 (228,786 *l.*) in the cost of the liquor as landed at the several ports, and of *Rs.* 12,61,518 (126,151 *l.*) for local carriage and contingencies, making a total increase of *Rs.* 35,49,379 (354,937 *l.*)."

According to the Military Estimates for 1865-66, the total charges for malt liquor and spirits in the three Presidencies will be as follows:—

Malt liquor - - - - - - - -	£. 495,245
Spirits - - - - - - - -	48,327
Total - - - -	£. 543,572

Comparative health of tempera and intemperate soldiers.

75. Valuable statistics will, it is hoped, be obtained after the close of the present year, to show the comparative health and immunity from fatal disease enjoyed by the total abstainers from liquor, by the temperate, and by the intemperate, among the soldiers of the British army in the Bengal Presidency. Orders were issued by his Excellency the Commander in Chief, at the close of the last year, under which all commanding officers were instructed to keep up daily returns with this object.

Sale of spirits in cantonments.

76. The recommendation of the Royal Commission, that "the sale of spirits in military bazars should be made illegal, and, as far as practicable, suppressed," had been acted upon in all parts of this Presidency for many years before the recommendation was made, but the prevention of the unauthorised sale of spirits to the soldiers has always been a matter of great difficulty, in consequence of the constant demand for them that exists, and the large profits that are always to be made by supplying them. The law on the subject has been made still more stringent during the past year, by the enactment of Act XXII. of 1864. Severe penalties, including imprisonment and whipping, are laid down for the sale in any military cantonment, unless under the written license of the officer commanding, of any spirituous liquors or intoxicating drugs to or for the use of any European soldiers, or their wives, and this provision may be extended, at the discretion of the local government, to any limits around the cantonment. The mere possession of spirituous liquor in cantonments is, under certain circumstances, punishable. It is hoped that means may be found for carrying out the provisions of the law with greater stringency and success than has hitherto been found possible.

Supply of boots to the troops.

77. The Royal Commission has stated in its report that "the boots which at present are issued to the soldier do not fit well. They are made at home on a very few models and sizes, and when sent out to India are found in very many cases not to be wearable." We have addressed the Government separately upon this subject, with the object of ascertaining whether there is any ground for complaint on this account at the present time. So far as we have been able to learn, we believe that whatever may have been the case formerly, the boots that are now supplied are excellent. We have been informed by a distinguished officer, who has had the best possible opportunity of knowing the truth, that "there are no better boots in the world than those supplied by Government to the soldier in this Presidency."

Conservancy of barracks and hospitals.

78. During the last few years, the conservancy of barracks and hospitals in this Presidency has received much attention, and great improvements have been effected. All these have originated in the abolition of sewage drains, and in the substitution of the dry system, which consists in the immediate removal of all

filth in air-tight receptacles, and its burial at a distance from human habitations. Owing to the almost immediate commencement of putrefaction in the hot and rainy seasons, this is the only plan which has been found to be inoffensive. The system of dry conservancy, introduced by Dr. Hathaway into the Punjab gaols in 1852, was the application to the requirements of large bodies of men of the simple arrangements which had long been found to be perfectly successful in private life. Nothing could possibly be more satisfactory than the results obtained under this system in the gaols of the Punjab and of the North Western Provinces. Objection has been frequently made to it by persons who have not seen it in actual operation, but it may be confidently stated that under no system which has ever been followed in the most civilised countries have the results been more successful. When the system is properly carried out, there is perfect cleanliness, and entire absence of all nuisance. In December 1861, the Commander in Chief, impressed with the excellence of the arrangements which he had seen carried out in the central prison at Lahore, ordered their adoption in several military stations, and, in February 1863,* the system was extended to all our cantonments. Although there is still in many places great room for improvement, the conservancy of our cantonments is, generally speaking, incomparably more satisfactory than it was, and the just causes of complaint which existed a few years ago have, for the most part, been removed.

During the past year the system has been further developed by the introduction of the use of dry earth as a deodorizer, in the manner recommended by the Rev. H. Moule, in a paper read before the Society of Arts on the 5th May 1862. The general adoption of this plan was strongly recommended by the Indian Gaol Committee, after careful inquiry, and after complete practical proof had been obtained of its efficacy. The Sanitary Commission entirely concurred in these conclusions, and advised that the dry earth system should be tried upon a large scale. During the past year experiments have been carried on in nearly all the gaols and military stations between Peshawur and Singapore, and there is an almost complete concurrence of opinion that, when properly managed, its success has been most remarkable. We have deferred making a final report upon this subject, because additional expense will necessarily be incurred by the general introduction of the system, and we have been desirous of learning by full experience how the objects in view can be attained in the most economical manner.

The Royal Commission recommended that, "wherever practicable, iron or earthenware water latrines, supplied with water and drained to an outlet, be introduced instead of the present system; that where this is impracticable, all cess pits be abolished, and metal or earthenware vessels, to be removed twice a day, substituted." So far as the abolition of cess pits and the daily removal of filth is concerned, the recommendation has been fully carried out, but the introduction of a system of water latrines is a measure which we, in common with all Indian authorities, have found it impossible to support. The question is not one which it is necessary to discuss in this place. It is sufficient now to state that it is a question which has received our frequent consideration. There is, so far as we have been able to ascertain, no difference of opinion among those persons who have studied the subject in this country with the greatest care, and who by practical experience are best qualified to form a sound judgment regarding it, that the difficulties and objections in the way of carrying out the recommendation of the Royal Commission are insuperable.

Despatch of recruits to India.

79. There are a few other subjects noticed by the Royal Commission, which it is desirable to mention here.

The first recommendation of the Commission is, "that no recruit be sent to India under 21 years of age, nor until he has completed his drill at home; and that recruits be sent direct from home to India, so as to land there early in November." The latter part of this recommendation is sufficiently acted upon, for all troops, except under some special circumstances, now reach India in the cold season. The former part of the recommendation falls within the province of the home authorities, and we have been unable to learn whether it has been under their consideration.

80. The

* Quartermaster General's Circular, No. 227 B, dated 7th February 1863.

80. The recommendation of the Royal Commission,* "that until the mortality be reduced, the period of service in India be limited to ten years," is in accordance with existing practice. Limitation of period of Indian service.

81. The recommendation† "that medical candidates be required to undergo the course of instruction, including military hygiene, at the Army Medical School" has been carried into effect. Instruction of medical and engineer officers in military hygiene.

With respect to the recommendation,‡ "that every cadet of engineers should attend a course of sanitary instruction at Chatham," we have no information to show what has been done by the home authorities.

82. The recommendation, that § "in order to render available for India the experience obtained in dealing with all classes of sanitary questions in England, two officers of the Indian Government be appointed in England, to be associated with the War Office Commission for this special purpose," has been carried out. War office commission.

83. The recommendation,‖ "that the system of army medical statistics at present in use at home stations, be extended to all stations in India," had been acted upon before the publication of the report of the Commission. Army Medical statistics.

84. An Act¶ which, it may be anticipated, will have an important influence upon the health of the troops, and of our cantonments generally, was passed by the Legislature in 1864. This law has made many changes in the system of administration which had previously been in force in military cantonments. Among other provisions, the local government has been authorised, with the sanction of the Government of India, to make rules and regulations for numerous matters of local importance, which, in places subject to the ordinary civil jurisdiction, would commonly be regulated by municipal bye-laws. These rules and regulations will provide for the following matters affecting the public health, safety, and convenience:— Act XXII. of 1864 rules and regulations for military cantonments.

> For the detection and prohibition of public nuisances; for the maintenance, generally, of the cantonment in a proper sanitary condition; for the prevention and cure of disease; for the management and regulation of the public roads, of conservancy, and drainage; for the regulation and inspection of public and private necessaries, urinals, cess-pools, drains, and all places in which filth or rubbish is deposited; of slaughter-houses, public markets, burial and burning grounds, and of all offensive or dangerous trades and occupations:
>
> For inspecting and controlling houses of ill-fame, and for preventing the spread of venereal diseases:
>
> For the supervision and regulation of public wells, tanks, springs, or other sources from which water is or may be made available for public use:
>
> For the execution and promotion of works of public utility and convenience:
>
> For the registration of deaths, and for making and recording observations and facts important for the public health and interests.

The Sanitary Commission has submitted to the local governments a draft of the general rules and regulations for matters affecting the public health, which it recommends for adoption under the Act in all military cantonments. It has also laid before the Government of India recommendations regarding many other subjects which appear to require regulation. The rules proposed by the Commission declare the general powers and responsibilities of the officer commanding the cantonment in matters affecting the public health; they provide for the appointment in every cantonment of a sanitary officer, and describe the duties which he is expected to perform; they carry out the recommendation of the Royal Commission that those parts of the new Medical Regulations of 7th October 1859, which define the sanitary duties of regimental, garrison, and inspecting medical officers, should be adopted to all Indian stations; they describe the means provided for carrying out measures necessary for the protection of the health of the troops and of the cantonment generally; and they embody those

* Recommendation 6. † Recommendation 33. ‡ Recommendation 34.
§ Recommendation 36. ‖ Recommendation 38. ¶ Act XXII. of 1864.

those parts of the existing regulations of the Government which bear upon questions of sanitary administration.

The whole subject of the measures required for carrying into effect the provisions of Act XXII. of 1864 is under the consideration of the Government. When it is finally disposed of, a great step will have been taken towards the completion of the code of regulations for the Indian Sanitary Service, the preparation of which was recommended by the Royal Commission, and ordered by the Secretary of State for India.

Organisation of general system of sanitary administration.

85. In the orders under which the Commission was constituted, we were directed to submit to the Government of India plans for carrying on and supervising a general system of sanitary administration throughout this Presidency, it being understood that the actual executive work must be carried out by the local governments and by the local civil and military authorities.

The organisation of such a system in the towns and districts in all parts of the country has engaged the attention of our Commission, and recommendations have been made to the Government of India on the subject. Even if we look no further than the protection of the health of the European soldiers, it will be evidently insufficient if we endeavour to improve the sanitary condition of our cantonments alone, and ignore the existence of the masses of the native population by which our troops are surrounded.

It is evidently neither expedient nor possible that the Government should undertake to carry out, generally, at its own expense, works of sanitary improvement in the towns and districts of India, and the costs of such works must ordinarily be borne by local and municipal funds. We believe that except in Bengal, for which province a new law was passed last year (Act III. of 1864, Bengal Council), known as the "District Municipal Improvement Act," which is likely to work satisfactorily, fresh legislation will be required to make it possible to enforce all the regulations necessary for the protection of the public health. We have recommended the establishment in all districts of local Boards for carrying on the municipal and sanitary service, the appointment of health officers, and the adoption of other measures for ensuring a proper supervision, throughout the country, of the sanitary condition of the people. The proposals that we have made are now under the consideration of the Government.

Registration of deaths.

86. It was recommended by the Royal Commission, "that a system of registering deaths and the causes of death, be established in the large cities of India, and be gradually extended, so as to determine the effects of local causes on the mortality of the native as well as of the European population." The measures which have been taken for this purpose in Calcutta, have been noticed separately. In all the provinces of this Presidency, action has been taken in the matter. The local governments and administrations have generally considered that there will be no difficulty in making at least a beginning towards the introduction of registration, by means of the ordinary police and municipal establishments, and of the village putwarees. Arrangements have been made for giving effect to the proposed system. For some time to come the measures taken will be little more than experimental, but it is hoped that they will lead to the establishment hereafter, without expense to the Government, or vexation to the people, of a really useful registration of deaths.

Sickness and mortality among prisoners in gaols.

87. The only class of the native population for which any useful statistics of sickness and mortality are now available, is that of the prisoners in gaols. Unfortunately, however, in consequence of the imperfection of the method according to which prison statistics have hitherto been prepared, it is impossible for us to draw any clear conclusions regarding the actual mortality that has occurred. The returns throw no light upon the amount of sickness and mortality among the native population at large, nor can we make any comparison between the healthiness of the prisoners and of the native and European troops. We have addressed the Government separately on this subject, but it is desirable that we should also notice it here, lest the returns of the mortality in gaols, which are given in the Appendix to this Report, should be misunderstood.

In calculating the death rate in Indian prisons, the actual number of deaths is not distributed over the whole prison population, that is, the number of persons imprisoned during the year, but over the daily average strength, or the number derived from dividing the aggregate of the daily number of prisoners by the number of days in the year. This is, in fact, the same method which is applied in

in calculating the rates of mortality in the army. In the latter case, the results may usually be considered fairly comparable with those for the ordinary civil population, because, as a general rule, there is little alteration during the year in the strength and constitution of regiments. Even in the army, however, this general rule is not always true, and there can be no doubt that the same cause which operates in the case of the gaols, sometimes has the effect of greatly exaggerating the apparent rate of mortality among small bodies of soldiers.

The units which constitute the "daily average strength" in the calculations for the gaols, are not real, but imaginary men. To make up a daily average strength of 100 prisoners, 100 or 1,000 men may have been actually imprisoned. Thus, an "average man" (as he may be called), may have been one man who was imprisoned for 12 months, or two men for six months, or 12 men for one month, or 52 men for one week, or 365 men for one day. But in calculating the death rate, no importance is attached to this fact, and whatever number of men it may have taken to make up one unit of the daily average strength, each death is looked upon as that of one actual man. The exaggerating effect of the present method may be illustrated by an actual case, taken from the report on the gaols of the lower provinces for 1863. During the calendar year in one of the gaols, the actual number of persons imprisoned was 76; viz., 19 present on 1st January, and 57 admitted during the year. Among these 76 men, there were 21 deaths, consequently, the death rate calculated on the total prison population, was 27·6 per cent. But the average daily number of prisoners during the year was only 24, and there having been among this number 21 deaths, the death rate is recorded as 87·5 per cent. It will be seen that it might have been far less or far greater, according to the duration of the imprisonment, before expiry of sentence or death, of the 76 prisoners. In one sense, the figures resulting from this method of calculation are mathematically correct, but they hardly represent any fact that can be readily understood. We have proposed, in a separate report, that the opinion of the War Office Sanitary Commission be requested as to the best mode of calculating death rate in gaols, and we have made recommendations to the Government, with the object of obtaining in future sufficient data for an intelligent criticism of the real mortality.

It will, therefore, be understood that the returns of the sickness and mortality in the gaols given in the Appendix to this Report and in the following table are in reality in no way comparable to those of the European and native troops, and that the death rate resulting from the method of calculation that has been followed will convey to the mind, unless care be taken to appreciate its real significance, a very exaggerated idea of the mortality that has actually occurred. According to these returns, the rate of mortality in the gaols of the several provinces of this Presidency during the last four years has been as follows:—

TABLE XIX.

Province.	1861.				1862.				1863.				1864.			
	Average Strength.	Died per 1,000 of Average Strength.			Average Strength.	Died per 1,000 of Average Strength.			Average Strength.	Died per 1,000 of Average Strength.			Average Strength.	Died per 1,000 of Average Strength.		
		Cholera.	Gaol Fever.	All Causes.		Cholera.	Gaol Fever.	All Causes.		Cholera.	Gaol Fever.	All Causes.		Cholera.	Gaol Fever.	All Causes.
Bengal Proper and Assam.	13,924	13·2	–	87·7	14,692	9·9	–	78·6	15,087	20·2	–	92·7	14,441	17·3	–	66·4
Behar, Benares, Oudh, Eastern Doab, and Bundelkhund.	11,398	11·8	–	76·1	13,975	·8	–	51·3	14,664	23·9	–	97·7	15,450	8·2	–	67·1
Nagpore and Central India.	5,089	2·4	–	34·0	5,316	4·7	–	39·7	4,975	10·1	7·8	73·4	5,448	11·6	–	51·4
Rohilkhund, Meerut, and Agra.	9,669	44·3	51·9	183·7	8,534	2·0	46·6	97·0	8,043	5·7	41·4	82·8	7,641	–	–	73·8
Punjab - - -	10,385	4·4	29·2	81·6	10,354	9·0	18·5	59·7	9,632	–	21·4	66·0	9,630	·1	–	86·2
Bengal Presidency -	50,915	15·2	16·1	96·7	52,871	5·5	11·2	66·8	52,401	14·3	11·7	85·8	52,598	8·4	*	69·8

* Returns of Gaol Fever in 1864 not received.

High rate of mortality in gaols. Typhus fever.

88. Although, as we have stated, these death rates are not comparable with those prevailing in the army, or among the free population, and although they give an exaggerated representation of the real mortality, there can be no doubt whatever that the mortality has been excessively high. Cholera and typhus fever have in particular been most fatal. In illustration of the excessive virulence of the latter disease, we may quote the case of the Agra gaol, in which, during the three months of March, April and May 1864, with an average strength of about 2,400 prisoners, 1,340 prisoners were attacked and 250 died. Other instances could easily be given in which the mortality has been little if at all inferior.

We have addressed the Government on several occasions regarding the mortality in Indian gaols, and it is not necessary that we should now enter into this question in detail. It is desirable, however, to notice that the subject of the condition of prisoners and of gaol discipline has been carefully considered during the past year. Early in 1864, a Special Committee was appointed to report upon the whole subject, and their recommendations have been laid before the Government.

We can hardly speak too highly, in many respects, of the constant care which has been given for some years past to the prisoners in our gaols, especially in the North-Western Provinces and in the Punjab, where better buildings generally exist than in Bengal. It would be difficult, more particularly in the larger or central prisons, to surpass the excellence of the conservancy arrangements; the food and clothing of the prisoners have ordinarily been far better than those of the lower classes of the free population, and the amount of labour exacted has been moderate. In spite of all this care, the mortality has been excessive, and we believe that this must be chiefly accounted for by the fact that the prisoners have, as a general rule, been over-crowded. This evil has more than counteracted all the efforts that have been made to improve the sanitary condition of our gaols, and it is one that has gone on increasing with the increase in the number of criminals and with the development of the system under which all prisoners sentenced to labour are employed in manufactures and other useful occupations within the walls of the gaol. It is only during the last few years that typhus fever of a most virulent and contagious character has attacked the gaols in Northern India, and this formidable disease has shown very strongly the dangers that follow upon over-crowding. We do not mean to say that this fever, or cholera, or any other serious epidemic disease, is actually caused by over-crowding, or indeed by any sanitary defects, however great. All that can be said is, that when, through some cause of which we are ignorant, diseases of this kind appear in over-crowded or otherwise unwholesome localities, they find the conditions most favourable for their propagation.

We have on several occasions addressed the Government on the subject of this fever, more especially with reference to the possibility of its attacking the European soldiers. We think that the attention of medical and other officers cannot be too strongly and constantly given to the necessity of taking every possible precaution for the protection of the European troops against this formidable disease. We fear that we have no right to assume that this is an imaginary danger, although the improvement in the sanitary state of barracks and hospitals, and of our cantonments generally, has been so great that we may hope that the conditions under which the European soldiers now live are not favourable to the propagation of such a disease as this.

Epidemic fever in Bengal.

89. This fever has been by no means peculiar to the gaols, but has attacked the general population in many districts of the Upper Provinces with great virulence. It has been supposed by some authorities that it may be connected with the epidemic fever which has lately proved so extremely fatal in some of the districts of Bengal. This, however, remains in doubt. Early in 1864, a Special Commission was appointed by the Government of Bengal for the purpose of investigating this epidemic fever. The Report of the Commission gives a lamentable account of the ravages of the disease in the districts of Burdwan, Hooghly, Nuddea, and the 24 pergunnahs. This fever, although apparently not really a new disease, has only attracted special attention during the last few years. There is nothing to show the fatal mortality caused by it, but in many places it has been fatal to an extent which would be almost incredible if the facts were less completely established. The following statement is extracted from the Report of the Commission of Inquiry, para. 38 :—"Many large *baries*, in which there were formerly 30 or 40 residents, have now been left with perhaps one solitary

solitary occupant; whole mohullas and streets have been deserted, and large villages which formerly told their residents by thousands, can now almost number them by hundreds. The total population of Oollah was stated to have been 18,000 to 20,000 before it was attacked, and it was calculated that at least 12,000 of these had fallen victims within six years. The village of Sreenugger has been almost depopulated. At Culna three-fourths of the inhabitants have been carried off. Upon the whole, we believe that about 30 per cent. of the whole population of the infected area have died."

In the orders of the Government of Bengal passed upon the Report of the Commission of Inquiry, the following account is given of the common condition of the villages of this part of Bengal* :—

"The surface of the land within the village is covered with low jungle. The villages are laid out on no plan, and without any reference to conservancy arrangements. The houses or huts are built of earth taken from a hole close by, which becomes a receptacle for all kinds of filth. All ventilation is kept out by the hedge of jungle with which every hut or collection of huts is surrounded. Filth is deposited indiscriminately in the nearest available spot. There are no public or private necessaries, and the people resort to the jungles and open fields in the neighbourhood of their houses. The houses are unventilated and overcrowded; the poorer classes sleep on mats on the raised mud floor, sometimes not more than a foot from the ground; and from the brick houses in which the better classes reside, the filth is allowed to trickle through some opening on the floor and brick-work, and to lie beneath the walls. The tanks near the villages are used indiscriminately for bathing, washing, cooking and drinking purposes, and being also used as receptacles for all kinds of refuse and filth, the water they contain is unfit for domestic purposes." "In the Mahomedan quarters of villages" (we quote from the Report of the Commission) "the dead are constantly buried on the very borders of the tanks. Here and there cemeteries are to be found, but even in those places they are not exclusively resorted to. Graves may be seen scattered about in every direction, and these graves are seldom made sufficiently deep to ensure the people against poisonous exhalations from the interred bodies. The bodies lie so near the surface that sometimes, as is well known, they are disinterred by jackals and dogs. The Hindoos, in ordinary times, pretend to burn their dead; but even at such times only a few bodies are effectually destroyed. In most cases the half-burnt remains are left to be devoured by birds and animals, and many bodies are simply thrown away without funeral rites of any kind into nullahs and rivers. In times of great mortality, Hindoos and Mussulmans alike abandon all attempt to dispose of their dead with respect and decency, and bodies are recklessly thrown out in all directions, poisoning the air for miles with the foulest effluvia."

The Commission of Inquiry recorded its opinion that the main causes of the fatal fever which has prevailed are miasm, polluted drinking water, vitiated air, and deficient ventilation, excessive use of farinaceous food, and, to a slight extent, contagion. Although we are not prepared to agree altogether in these conclusions, believing, as we do, that it is far more probable that the disease has its origin in a certain specific poison propagated from man to man, than that it is produced by any sanitary conditions, however unfavourable, we have been unable to suggest any practical measures, in addition to those which have been recommended by the Commission, and adopted by the Government of Bengal. Whatever be the origin of the disease, or the manner in which it spreads, we may conclude with certainty that it finds the best possible conditions for its propagation in the horrible and almost incredible filth in the midst of which the people live. We have described elsewhere the state of Calcutta, the capital city of these same Bengalees, and have declared that no parallel to its filthiness can be found in any other part of India with which we have any acquaintance. It will be seen from the foregoing extracts, from the orders of Government, and from the Report of the Commission of Inquiry, that the state of the people in the town is more than equalled by that of the people in the country. We find, too, in the country as in the town, that the difficulties of contending against these great evils are aggravated, to an incalculable extent, by the utter apathy of the better classes of the community. "The sympathies of the wealthier classes" (write the Commissioners) "have been, to a very slight degree, enlisted in favour

* Letter, No. 1479 T., dated 12th July 1864, from Secretary to Government of Bengal, to President of the Commission of Enquiry on the Epidemic Fever.

favour of their poorer neighbours. Indeed, in most places, the efforts made by the zemindars, and other well-to-do people in the Mofussil, to assist their ryots, may be, without injustice, described as *nil*. It is to be feared that, in some instances, where collections of money have been made to defray the expense of sanitary improvements, contributions have been extorted from those who were ill able to pay them, while the richer inhabitants put their names down in the subscription list for sums, of the insignificance of which they ought to be ashamed, and the full amounts of which they did not, in point of fact, subsequently pay up. These remarks must not, indeed be considered of universal application. Some exceptions stand out in pleasing relief."

The Government of Bengal has taken such measures as were in its power to reverse or mitigate the worst of the sanitary evils that have been described, and the enactment of the "District Municipal Improvement Act," which has been noticed elsewhere, will greatly increase the means of action at the disposal of the authorities. But the complete removal of these evils is a work far beyond the powers of any Government. Liberal assistance has been promised by the Government in the execution of any works of obvious advantage which may be immediately undertaken with benefit to the public health. It has been asserted that the construction of railways and roads has aggravated the sickness by intercepting the drainage. A special inquiry is in progress, with the view of ascertaining the extent to which the drainage of the country has really been interfered with, and of showing what measures ought to be adopted for its improvement.

Act for the prohibition of inoculation in Calcutta. Vaccination.

90. At the commencement of the present year, an Act (No. IV. of 1865) was passed by the Bengal Legislature for the prohibition of the practice of inoculation in the town and suburbs of Calcutta. The Act may be extended to other places under certain conditions, when it appears to the Lieutenant Governor of Bengal that sufficient arrangements have been made for the protection of the inhabitants by vaccination. Under this Act any person performing inoculation is liable to imprisonment for three months, or to a fine of 200 rupees, and the same penalties are laid down against any person who, having been inoculated, shall enter any place in which the Act is in force, until 40 days have elapsed from the date of inoculation, or without a certificate from a qualified medical officer that such person is no longer likely to cause contagion. The reasons for this enactment are given in the preamble, as follows: "Whereas it is found that small-pox is spread by inoculators who infect persons living in towns without adopting any precaution against contagion: and whereas proper and sufficient arrangements have been made in the town of Calcutta and in its suburbs, and in certain other towns in the province of Bengal, for the vaccination or inoculation with the cow-pox of the inhabitants thereof respectively; and it is desirable to prohibit by law the practice of inoculation with the small-pox in such towns and places; it is enacted as follows:" &c. &c.

No reference having been made to the Sanitary Commission on the subject of this Act, our knowledge of the reasons for which it was considered expedient, is altogether imperfect. We therefore do not wish, at present, to give any opinion regarding the propriety of the measures that have been adopted. But we think that very careful consideration ought to be given to the question before this Act is extended to other places. We have been informed, on very high authority, that it may be estimated that 85 per cent. of the Hindoo population in Calcutta, and its neighbourhood were protected by inoculation before this Act was passed. The people generally utterly disbelieve in the efficacy of vaccination, and whatever may be the case in Calcutta, there can be no doubt that in most other parts of the country this disbelief has been completely justifiable, because the vaccination that has ordinarily been afforded has been worse than useless. Our reasons for this belief have been given in a separate report. In the hill province of Gurhwal, the result of the admirable measures of Dr. Pearson has been that the whole population has been protected against small-pox by vaccination, and inoculation has almost ceased, not because it has been prohibited, but because the people have become convinced of the superiority of vaccination. But in the cool climate of the hills vaccination can be carried on almost throughout the year; the population is scanty, and having learned by experience the advantages of vaccination, the people are not only willing but eager to obtain them. In the plains of India, on the other hand, vaccination can usually only be practised with success during the

the cold season. If, as Dr. Pearson has shown, the people can be taught to believe in the efficacy of vaccination, they will themselves adopt the practice, but it is visionary to suppose that the Government can, by its own action, protect by vaccination more than a hundred millions of people. We do not overlook the fact that the practice of inoculation may lead to the introduction of small-pox into places which would otherwise have been free from the disease, nor do we deny that, under certain circumstances, its prohibition by law may be not only proper, but necessary. We do not doubt, for example, that such prohibition ought to be enforced at the present time in England. But whether, under the circumstances which now exist in those parts of India in which inoculation has been commonly practised, any prohibition of the kind is desirable, appears to be very questionable.

Sanitary state of Calcutta.

91. In the orders under which this Commission was constituted, the improvement of the sanitary state of the city of Calcutta was specially noticed as a matter of pressing importance, and this was one of the first subjects which came under our consideration. In a Minute, dated the 5th March 1864, the President of the Commission gave a sketch of the sanitary state of the northern or native division of the town. He stated that in the filthiest quarters of the filthiest towns that he had ever seen in other parts of India or in other countries, he had never seen any thing to be compared with the filthiness of Calcutta, and that this was true, not only of the parts of the city inhabited by the poorer classes, but of the quarters filled with the houses of the richest and most influential portion of the native community. He stated that the condition of the river upon the banks of which Calcutta stands was as abominable as that of the city itself; that 5,000 human corpses had been every year thrown from Calcutta into the river, which supplies the greater part of the inhabitants with water for all domestic purposes, and that 1,500 corpses had been thrown into the river in one year from the Government hospitals alone. Mr. Strachey declared the state of the capital of British India, one of the greatest and wealthiest cities in the world, to be a scandal and a disgrace to a civilized government.

If the language used by the President of this Commission, in describing the filthy condition of the native quarter of Calcutta, had been still stronger, it would not have been misplaced. Evidence of this assertion may be found in every page of the report of the health officer of the municipality for the past year. The greater part of that report consists of descriptions of perhaps the most abominable series of nuisances that were ever allowed to grow up in the principal city of a civilized government. The efforts of the municipality and of their energetic health officer, Dr. Tonnerre, to improve matters have not been fruitless, but the difficulties to be contended against have been excessive. Among these difficulties not the least serious are those caused by the indifference or passive resistance to all improvement on the part of the upper classes of the native community. In other countries, and even in other parts of India, it is only the lowest and poorest section of the community that is content to live in the midst of nuisances and filth. This is not the case in Calcutta. "The most respectable and wealthy of the natives," writes the health officer, "inhabit the second and third divisions, and yet the nuisances are more numerous and worse than in any other district. * * I have no words to describe the nuisances which I have discovered in some places, chiefly in the neighbourhood of Burra Bazar. As it was impossible to find out some of the most abominable nuisances without trespassing on private grounds, offenders had hitherto enjoyed an impunity which had rendered them more and more indifferent to the most common principles of cleanliness and decency. * * The police records will show that the most numerous and heaviest fines were inflicted upon some of the wealthiest natives in the above localities. The drains in that part of the town, though cleared every day, are most disgusting owing to the immense quantity of offensive matter which is let off daily into them from the houses. * * No nuisances in the other divisions ever equalled those I discovered in some places in this.† Any fine below the maximum fixed by the Act is of no effect, as the accumulation of filth is so great in some of these places that the parties prefer paying the fines to clearing their premises, which would require considerable labour and great expenditure of money."* These facts

† Health Officer's First Annual Report, 1865, page 6.

facts serve to show how great are the difficulties with which the work of sanitary improvement in Calcutta has to contend. It may be added that there could hardly be found a better illustration of the truth of the assertion made by the President of our Commission in the Minute to which reference has been already made, that in such a state of society as this of Calcutta, a system of administration, based upon the model of English municipal institutions, must be unsuitable and inefficient.

Sanitary improvements carried out in Calcutta.

92. It would, however, be most unjust to say that there has been no improvement during the past year. On the contrary, although matters are still, in some respects, almost as bad as ever, very great progress has been made.

Throwing dead bodies into the river. Burning ghats.

93. The practice of throwing the dead bodies of men and animals from the city into the river has been entirely stopped. The hospitals and prisons of the Government no longer dispose of their dead in this shameful manner, and the bodies of all Hindoo paupers are burned at the expense of the municipality. This great reform has been effected without the slightest difficulty or opposition of any kind, and at a trifling expense. The question which arose during the earlier part of the past year regarding the proposed removal from Calcutta of the places set apart for burning the dead to situations outside the city, is only noticed here because it created at the time considerable interest and led to much discussion. A most exaggerated importance was given to the subject, not, however, by the native community, for the notion, that the Hindoos looked with apprehension upon the action taken by the Government as an attack upon their religion, had no foundation. The municipality of Calcutta was allowed by the Government of Bengal to dispose of the question in its own way. That the practice of burning the dead in the midst of the city is indecent and objectionable is evident to every Englishman, and in almost any other part of India but Calcutta this would be the opinion of the better classes of the native community. Looking upon the matter, however, as one that concerns the public health, it has little real importance, and measures are being carried out by the municipality which will probably remove all objection of this kind.

Sanitary survey of Calcutta, and suppression of nuisances.

94. During the year a sanitary survey of the whole town was made by the health officer, Dr. Tonnerre, with the object of carrying into immediate execution the most urgent reforms, and of ascertaining the best mode of suppressing the more common nuisances. The drains and sewers of the town, which were choked up with the accumulated filth of many years, have been cleared out. The amount of filth and silt, and rubbish, is enormous that has been thus removed from many parts of the town. Some of the most important drains had become altogether obliterated, with this result, that during the rainy season a considerable part of the most populous and wealthy quarters of the town was often under water. These have been re-opened, and the benefit will be great.

Many offensive trades and occupations which caused insufferable and dangerous nuisances, have, for the first time, been banished from the interior of the city. The practices which the health officer discovered, and which have now been stopped, were most abominable. Measures have also been taken for the regulation of the public latrines, and although these are still, in many cases, disgusting nuisances, they are not so bad as they used to be.

One hundred urinals are in course of construction in the principal thoroughfares. They will, it is hoped, be kept in good order, and means of deodorising them will be provided. It may be anticipated, as the health officer has observed, that the erection of these buildings will not only improve the sanitary condition of the streets, but will make it possible to enforce common rules of decency, which are now totally disregarded.

Conservancy of Calcutta.

95. In the Conservancy Department the establishments have been largely increased. The refuse of the town is now carted away from the streets daily, instead of being left exposed for days or weeks; the offal which was formerly thrown into tanks and holes within the town, or into the river, and the carcasses of animals, are now taken away daily to a distance of three miles and burned in a kiln, without any offensive odour, thus, as the health officer says, "freeing the town from one of its most noxious and disgraceful nuisances." A still greater improvement has been undertaken and partially carried out in the removal of the night soil, the greater portion of which formerly found its way into the open drains of the streets. This will be taken to waste ground at a distance of three

three miles beyond the eastern boundary of the town, and there buried, and arrangements have been made for removing the filth in air-tight vessels, so that no nuisance shall be caused. The destruction caused by the hurricane in October caused delay in carrying out the new scheme of operations, but it has already been partly introduced, and it is hoped that before the coming rainy season the practice of throwing night soil into the river will have altogether ceased. The municipality has further made arrangements for constructing a railway for conservancy purposes. This is now in progress, and it will greatly facilitate the task of getting rid of the filth and rubbish of the town.

Drainage and sewerage works in Calcutta.

96. It may properly be noticed here that the great drainage and sewerage works of Calcutta have made good progress during the year. It is hoped that it will be possible, before very long, to bring into use a considerable portion of the new system, and better means will then be afforded than any which now exist of judging how far this great and costly undertaking is likely to prove successful. The time has past for criticising these works. They have now made such progress that they must clearly be carried on to completion, and we can only hope that the fears expressed by many high authorities will be shown by experience to have been unfounded, and that this great system of drainage will prove, as some anticipate, a remedy for the most serious of the present sanitary evils of Calcutta.

Sale of unwholesome food and drink.

97. The sale of unwholesome food and drink in Calcutta has been the subject of much consideration during the past year. The inquiries of Dr. Chevers and of other officers have shown that there is reason for believing that much of the liquor sold in Calcutta is adulterated and drugged to a dangerous extent, and that the European sailors and soldiers are among the chief sufferers from these practices. The sale of food unfit for human consumption has also been, undoubtedly, very common. Measures have, for the first time, been taken during the past year for dealing with this important subject. A special establishment has been appointed with the object of enabling the health officer to carry out the systematic inspection of food and drink exposed for sale in shops and public markets, and to ensure the seizure of unwholesome articles. Large quantities of food and drink, unfit for consumption, have been confiscated since these measures were commenced, and although much remains to be done, there can be no doubt that much good has been effected.

Calcutta Slaughter-houses.

98. The disgusting condition of the slaughter-houses from which all the meat consumed in Calcutta is supplied, was brought prominently to the notice of the Government of Bengal by the Sanitary Commission in March 1864. Not a single properly regulated slaughter-house exists, and nothing could possibly be more filthy and revolting than their condition when we inspected them. It is satisfactory to be able to report that measures have been taken which, it is hoped, will lead to the speedy and complete removal of one of the worst of the sanitary evils of Calcutta. The municipality has undertaken to construct at once a large public slaughter-house in the suburbs of Calcutta, according to approved European models, and to carry on the management by means of its own servants. The existing law, not providing the necessary powers for the proper superintendence and regulation of such establishments, an Act (No. VII. of 1865) has been passed by the Bengal Council for this purpose. This Act prohibits the use in the suburbs of Calcutta of any unlicensed slaughter-house; it provides for the adoption, in all cases, of proper conservancy arrangements; for making bye-laws for the management and inspection of slaughter houses and markets; and for the seizure of unwholesome meat or fish. The provisions of this Act may be extended to other places in Bengal, and there can be no doubt that they will prove extremely useful.

Calcutta water supply.

99. Another measure of the very first importance to the public health has at last, after many years of fruitless discussion, reached a point at which we may reasonably hope that we are about to obtain an actual result. We refer to the scheme which has been matured by Mr. Clarke, the Engineer of the Municipality, for supplying the City of Calcutta with water, at an estimated cost of more than 600,000 *l.* The municipality has declared that it is able and ready to commence immediately the execution of the plan, and although the propositions that have been made have not, so far as we are informed, been finally sanctioned by the Government of Bengal, and although in some respects the

projects may possibly receive considerable modification, it may be expected that action of some kind will soon be taken.* Of all the measures that are required for the improvement of Calcutta, the provision of an ample supply of water is perhaps the most important. It is not necessary that we should now describe in detail the project which has been adopted by the municipality. The source of supply will be the Hooghly at Pulta, about 14 miles above Calcutta, and, after being passed through filtering beds, the water will be conveyed in a covered channel to all parts of the city. It is much to be regretted that the quality of the water at Pulta is not more satisfactory, and our Commission very unwillingly accepted the conclusion that no other source of supply is practicable. A reference has lately been made to the Home Government at our suggestion, with the object of obtaining the opinion of the War Office Sanitary Commission regarding the methods of filtration which ought to be adopted.

Prevalence of small-pox.

100. Towards the end of 1864, and during the earlier months of the present year, small-pox was excessively prevalent in Calcutta, and there has been an epidemic of this disease over a great part of the Bengal Presidency. A small-pox hospital was established in Calcutta, and proved very useful. Dr. Chuckerbutty, who had the management of the hospital, has given an interesting account of the facts observed. Between the 23d December 1864 and 13th April 1865, 627 persons were admitted into the hospital. Of these, 354 were unprotected by inoculation or vaccination, and among them there were 185 deaths, or 52 per cent. One hundred and sixty persons were admitted after previous vaccination, and among them 43 died, or 29 per cent.; among 12 of these admissions in which vaccination had been twice performed, there were no deaths. Sixty-five persons were admitted after inoculation, and among them 20 died, or 30 per cent. "This result," writes Dr. Chuckerbutty, "obtained in a country where inoculation has been the rule, and vaccination the exception, is a most significant fact. The diminution of the risk is greater from inoculation than vaccination, and the popular belief in this case is perfectly correct."

The establishment of the Small-pox Hospital in Calcutta was followed by another useful measure, the provision, at each of the police stations, of means of conveying to hospital persons suffering from small-pox and other contagious diseases, and the issue of orders to the police prohibiting them from supplying any public conveyance for such purposes.

Calcutta gaols.

101. The state of the Calcutta Gaol and House of Correction formed the subject of a special report to the Government during the past year. These gaols were certainly the filthiest and the worst managed of any that could be found on this side of India. We need not now repeat the account that was formerly given of them. It is sufficient to state that great improvements have been carried out, and that an Act of the Legislature has given to the Government of Bengal the power, which it did not possess before, of establishing in these gaols a proper system of management and supervision.

Calcutta police hospital.

102. A worse scandal than the condition of the Calcutta Gaol was that of the Police Hospital. The state of filth in which the buildings of this institution were found at the beginning of the past year was shameful, and the accounts that have been given of the mismanagement and actual cruelty that went on would hardly be credible were the evidence less conclusive. It would be difficult to find a more discreditable history than that of the Police Hospital of Calcutta, which the Sanitary Commission had to report last year to the Government. Matters have long ago been placed on a more satisfactory footing, and the erection of a new Hospital, instead of the present inconvenient and unsuitable buildings, has been ordered.

Hospitals in Calcutta.

103. The other hospitals of Calcutta have, we need hardly say, been managed very differently. But, as Dr. Fayrer has justly observed, however excellent may be the medical care and supervision afforded, every hospital in Calcutta is defective in the most important essentials of arrangement and construction. "The hospitals of Calcutta," he writes, "were built before hospital construction had received the scientific consideration to which it has been deemed entitled

* We understand that, since this was written, the project has been sanctioned by the Government of Bengal.

entitled of late years, and though we have more than one noble institution, we cannot strictly be said to have really one good hospital."*

We have noticed elsewhere the arrangements that have been made for introducing female-nursing into the Calcutta Hospitals, and the plans which are now under consideration for the further extension of the system.

Establishment of Chair of Hygiène.

104. A Chair of Hygiène was established during the past year in connection with the Calcutta Medical College, and the Secretary to the Sanitary Commission was appointed to be the first Professor. Lectures on many subjects affecting the public health were delivered during the season.

Registration of births and deaths in Calcutta.

105. The registration of births and deaths has been established in Calcutta during the past year. Considering the novelty of the system and the ignorance of the people, no great accuracy of registration could at first be expected. The returns of births have hitherto been of little value, and those of deaths probably exhibit no great approximation to the truth. A good beginning has however been made, and there is no reason for doubting that the returns will go on improving in value. Their utility will not properly be felt so long as there is no census of the population of the town. The estimates of population that have been made during the last 50 years have varied from 200,000 to 700,000, and there is nothing to show the real number of inhabitants. The best authorities at present consider that the population is about 400,000 or 500,000. It is hoped that the want of a census will be supplied during the present year. In the present state of ignorance it is useless to attempt to estimate the actual rate of mortality in Calcutta among any class of the population. Even, however, in their present imperfect state, the returns possess considerable interest. The following Table is taken from them. The figures show the number of deaths from various causes recorded during the last nine months of 1864:—

Religion.	All Causes.		Small Pox.		Dysentery.		Diarrhœa.		Cholera.		Fever.		Phthisis.		Hepatitis.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Christians -	302	219	12	13	28	16	6	17	92	29	28	23	19	11	5	–
Hindoos - -	4,671	3,047	221	189	594	522	104	161	1,562	615	1,131	763	147	81	3	2
Mahomedans -	1,778	982	84	83	223	158	19	29	515	162	568	338	61	31	–	–

Mortality from cholera in Calcutta.

106. More than 80 per cent. of the recorded deaths were caused by zymotic diseases. Cholera, dysentery, and fever were the most fatal. No less than 23 per cent. of the deaths among Christians, 28 per cent. among Hindoos, and 25 per cent. among Mahomedans were due to Cholera. Nor was this any peculiarity of the past year. The inquiries of Dr. Hugh Macpherson have shown that during the 20 years ending with 1860, cholera had never been absent from Calcutta. "It reaches," says the report of the Cholera Commission, "its lowest point in August, when about 150 out of every 1,000 deaths among the native population are attributable to it. It then gradually rises through the autumn and winter, reaches its climax in April, and then again falls regularly until August. When the disease is at its highest point of intensity, it causes every year more than half of the total number of deaths."

These facts and figures, however, do not, so far as we are able to judge, give a correct representation of the average mortality for cholera among the fixed European population of Calcutta. The report of the Cholera Commission, basing its conclusions on Dr. Hugh Macpherson's researches, states that "in the five years ending with 1860, there were 716 deaths from cholera among the European Protestant population. This was one-fourth of the deaths recorded from all causes; of these 716 deaths, 76 per cent. occurred among the floating population, consisting chiefly of sailors visiting the port. * * In the five years in question, out of a total number of 1,170 deaths from all causes among the European

* Surgery in Bengal: An Address to the Bengal Branch of the British Medical Association, 1865, p. 10.

European floating population, no less than 46 per cent. occurred from cholera, while among the resident male population, out of a total number of 822 deaths, only 13·7 were due to that cause."

Mortality among sailors in Calcutta.

107. The Commission has frequently, during the past year, had occasion to notice the excessive mortality among the sailors in the port of Calcutta, and it has addressed the municipality and the Government of Bengal on the subject. Although there is ample evidence to show that the rate of mortality is very high, there are no available statistics in which complete confidence can be placed. We have pointed out the great importance of supplying this want, and we believe that there need be no difficulty whatever in causing proper registers to be maintained, which should at all times show the number of sailors in the port, and the mortality that occurs among them. The almost total absence of means for protecting the lives and health of European sailors in Calcutta, is, at the present time, very greatly to be regretted. There are practical difficulties to be overcome before an effectual remedy will be applied to existing evils, but there is no reason why they should be considered insuperable. Our Commission hopes that it may be able before long to make further recommendations to the Government on this subject.

Great sanitary improvement carried out in Calcutta in 1864.

108. We think that it will be evident from the foregoing account, that however serious may be the evils which remain, there has been great progress made in carrying out sanitary improvements during the past year in Calcutta. Among the causes which have promoted this result, not the least important has been the adoption of a measure which was formerly recommended by our Commission, the appointment of the chairman of the municipality to be also the head of the police establishments. This has provided a stronger executive authority than before existed, and the old and mischievous antagonism between the municipal and police authorities has been got rid of. Other measures recommended by the Commission have also been authorised by special legislation for increasing the power of the local magistrates in dealing summarily with offences affecting the public health and convenience, and in preventing nuisances. It is one of the signs of the increased vigour of administration, that whereas in 1863 the total amount of fines paid through the police to the municipality did not exceed 5,000 rupees, the amount in 1864, on account of the Conservancy Department alone, was upwards of 30,000 rupees.*

Conclusion.

109. We have noticed in the present report only the more important subjects which have come before our Commission during the past year. On many other questions affecting the health of the army, or of other classes of the population, separate reports have been submitted to the Government, or other action has been taken. The indication of defects will always be the chief ordinary duty of a body such as ours, and it is, therefore, not to be wondered at while we have found many occasions for blame since our Commission was appointed, we have found comparatively few for praise. When, however, we look back upon the past, we believe that it may be said, with perfect truth, that in carrying out or in laying the foundation of great sanitary improvements, no Government has ever done more, in an equally short space of time, than the Government of India has done during the last few years.

I have, &c.
(signed) *John Strachey,*
President of the Sanitary Commission for Bengal.

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* Health Officer's Report, 1865, page 9.

APPENDIX.

VITAL STATISTICS of the EUROPEAN ARMY of the BENGAL PRESIDENCY, for the Years 1858 to 1864, with a SUMMARY of the Results during the same Period for the NATIVE ARMY and the GAOL POPULATION. Compiled and Systematically Arranged from the Original Returns, by *James L. Bryden*, M.D., Assistant Surgeon, Bengal Medical Service; in charge of the Statistical Branch Office of the Principal Inspector General, Bengal Medical Department.

PREFACE.

THE Tables of the present Series are arranged in three divisions.

The First—the Series for 1858—may be considered to hold a place entirely apart from the Tables which have reference to the experience of the succeeding years. Such a position the events of the year claim for this section; and the more so, that it relates to an Army which was new to the country, and exposed in the Field throughout its first year of service in India: it necessarily illustrates, moreover, the Statistics of Provinces—and not of the Cantonments of the Presidency, to which the Statistics of the years which follow have a direct relation. The Troops employed in Central India, in 1858, were not on the strength of the Army of Bengal; and consequently, the Statistics of the Central India Campaign are not included in the results for the year.

The Second Division exhibits the Statistics of Cantonment Life in Bengal for the five years 1859—63. It is prefaced by a Summary showing, in ratios, the results for these years; and also the general Statistics of Women and Children, of Native Troops, and the Gaol Population during the same period.

The Third—containing the Statistics of the year 1864—is the commencement of a new Series, in which the sickness and mortality of the European and Native Army, and of the Gaol Population, is shown in a parallel and comparative form.

EUROPEAN TROOPS, 1858.

TABLES (pages 68 to 77).

The experience of an unacclimatized Army in its first year of service in India: the results due chiefly to exposure in the Field: a healthy and non-epidemic year in the Provinces which were specially the seat of war.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Bengal* Presidency, during the Year 1858, and the prevalence of the principal Diseases in each Month of the Year.

Months.	Average Strength.	Average Number Daily Sick.	Daily sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	Hepatitis, Acute.	Hepatitis, Chronic.	All other Diseases.	Wounds and Accidents.
January	35,775	3,459	9·67	151	-	7	2	10	9	5	39	4	14	5	-	2	15	-	14	3	6	16
February	36,690	2,966	8·03	100	-	20	1	3	7	8	21	4	9	4	2	-	3	1	4	2	1	10
March	40,229	3,482	8·66	209	-	25	5	5	6	22	39	3	9	3	1	-	5	-	3	5	7	71
April	42,616	4,542	10·65	332	-	42	29	2	29	60	71	8	24	7	13	1	4	-	10	2	9	21
May	44,187	5,962	13·49	951	-	26	31	8	47	143	117	13	32	7	426	6	10	2	12	7	30	34
June	44,741	6,270	14·01	536	-	46	6	7	18	77	66	11	26	8	205	-	16	4	10	12	17	7
July	44,995	5,974	13·28	409	-	112	-	8	22	35	73	11	21	11	60	5	7	1	17	11	13	2
August	45,858	6,215	13·55	500	-	58	-	4	25	42	193	19	39	14	45	4	9	3	14	14	16	1
September	46,241	6,339	13·71	512	-	31	-	11	18	54	224	16	50	7	20	3	8	2	36	8	20	4
October	47,401	5,648	11·91	312	-	15	-	13	20	34	107	14	38	9	3	5	9	2	19	5	17	2
November	46,391	4,285	9·24	225	-	17	-	7	17	18	53	19	14	12	1	1	10	1	18	8	18	11
December	50,111	4,021	8·02	164	-	2	1	3	5	11	50	13	10	9	2	1	10	2	10	12	12	11
						401	75	81	223	509	1,053	135	286	96	778	28	106	18	167	89	166	190
						Died per 1,000 of Average Strength.																
	43,771	4,930	11·26	4,401	100·55	9·16	1·71	1·85	5·09	11·63	24·06	3·08	6·53	2·19	17·77	·64	2·42	·41	3·81	2·03	3·80	4·34

Deaths out of Hospital, 462. Died per 1,000 of Average Strength, 10·52.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Small-pox	1	10	27	146	59	40	7	-	-	-	6	17	313	·71	23·96
Intermittent Fevers	1,681	1,300	1,335	2,127	3,727	3,152	3,013	3,047	2,301	2,435	1,380	993	26,491	137·88	1·34
Remittent Fevers	37	81	258	742	998	1,524	1,071	1,062	732	493	216	122	7,336		
Continued Fevers	290	435	895	2,543	5,129	4,723	3,801	3,603	2,485	1,411	704	474	26,493		
Ophthalmia	131	206	262	249	180	228	274	302	219	259	225	252	2,787	6·37	-
Dysentery, Acute	272	234	333	591	482	464	635	1,411	1,177	934	588	487	7,608	20·26	13.39
Dysentery, Chronic	87	88	62	76	68	77	73	111	125	228	136	132	1,263		
Diarrhœa	522	491	825	1,149	1,203	984	1,489	1,852	1,463	1,042	647	547	12,214	27·90	2·34
Cholera	13	47	60	91	42	92	167	112	62	20	26	6	738	1·68	54·33
Rheumatism	229	289	317	288	265	245	353	325	293	328	332	419	3,683	8·41	-
Venereal Diseases	745	782	932	845	755	794	953	968	917	1,079	1,186	1,490	11,446	26·12	-
Phthisis Pulmonalis	16	19	11	16	26	49	36	48	25	44	32	35	357	·81	26·89
Heat Apoplexy	2	5	8	22	929	578	178	79	46	18	9	7	1,881	4·29	41·36
Delirium Tremens	22	12	7	7	18	24	30	29	28	34	30	26	267	·61	10·50
Epilepsy	7	11	11	11	14	16	28	27	17	32	18	26	218	·50	-
Respiratory Diseases	390	394	325	374	335	314	361	377	300	372	393	465	4,400	10·05	2·41
Hepatitis, Acute	81	94	87	120	149	178	162	191	214	231	210	177	1,894	6·70	8·72
Hepatitis, Chronic	44	53	59	61	53	88	82	113	108	148	124	108	1,041		
Abscess and Ulcer	392	432	513	577	789	819	1,032	852	773	679	551	577	7,986	18·42	-
Wounds and Accidents	851	647	1,062	746	514	397	385	402	358	498	576	614	7,050	16·10	-
All other Diseases	483	507	588	756	1,122	1,131	1,217	1,209	986	1,157	798	766	10,720	24·50	-
	6,296	6,137	7,977	11,537	16,857	15,917	15,347	16,120	12,629	11,442	8,187	7,740	136,186		
	Admitted per Cent. of Average Strength in each Month.														
	18·28	16·73	19·83	27·07	38·15	35·57	34·11	35·15	27·31	24·14	17·64	15·45	311·13		

EUROPEAN TROOPS, 1858—*continued.*

TABLE showing the Causes of Sickness and Mortality among the Men of European Corps, under Treatment in the General Military Hospitals at Fort William, during the Year 1858.

MONTHS.	Average Number daily treated in Hospital.	Number of Deaths.	CAUSES OF DEATH.																
			Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	Hepatitis, Acute.	Hepatitis, Chronic.	All other Diseases.	Wounds and Accidents.
January	394	12	–	–	–	–	–	1	3	–	1	–	–	2	–	1	2	1	1
February	234	9	4	–	–	–	–	2	1	–	–	–	–	–	–	–	2	–	–
March	204	17	13	–	–	–	–	1	–	–	2	–	–	–	–	–	1	–	–
April	247	36	28	–	–	–	–	2	–	1	2	–	–	–	–	–	1	2	–
May	187	10	3	–	–	–	–	–	1	–	2	1	–	2	–	–	–	–	1
June	277	38	19	–	–	–	5	1	1	1	3	4	–	1	–	–	1	1	1
July	284	36	23	–	–	1	4	1	–	1	4	–	–	1	–	–	1	–	–
August	229	22	5	–	–	–	2	2	3	5	2	–	–	1	–	–	2	–	–
September	212	12	–	–	–	–	–	3	3	2	1	1	–	–	–	–	2	–	–
October	213	9	3	–	–	–	–	–	2	–	1	–	–	1	–	–	2	–	–
November	273	16	3	–	–	–	–	–	4	–	5	–	–	–	–	–	3	1	–
December	224	9	–	–	–	–	–	–	4	–	4	–	–	–	–	–	–	–	1
	248	226	101	–	–	1	11	13	22	10	27	6	–	8	–	1	17	5	4

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Admitted during the Year.	Died per Cent. of Admissions.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		
Small-pox	–	–	–	1	–	–	–	–	–	–	–	–	1	–
Intermittent Fever	14	17	1	6	10	6	12	4	5	4	8	10	97	1·51
Remittent Fevers	5	2	1	10	2	–	7	–	2	–	3	1	33	
Continued Fevers	15	18	8	80	78	198	164	59	12	10	9	11	662	
Ophthalmia	17	12	9	16	7	29	14	6	6	6	21	12	155	–
Dysentery, Acute	5	5	5	6	3	22	30	15	12	7	10	5	125	10·40
Dysentery, Chronic	30	30	9	12	5	10	10	26	28	76	57	43	336	6·55
Diarrhœa	16	14	11	78	12	29	53	25	9	8	13	6	274	3·65
Cholera	–	5	23	51	2	35	32	13	–	4	3	1	169	59·77
Rheumatism	14	10	7	15	10	13	10	9	11	18	39	29	185	–
Venereal Diseases	32	41	21	53	25	62	35	17	14	20	22	19	361	–
Phthisis Pulmonalis	7	5	3	5	7	5	3	6	1	9	13	17	81	33·33
Heat Apoplexy	1	2	2	1	2	5	1	11	7	8	6	–	46	13·00
Delirium Tremens	–	–	–	–	1	1	–	–	1	–	1	2	6	–
Epilepsy	–	1	2	3	1	3	3	2	1	5	4	5	30	–
Respiratory Diseases	13	19	7	24	14	22	15	12	11	23	21	8	189	4·23
Hepatitis, Acute	3	–	–	1	1	5	3	–	1	1	7	–	22	4·55
Hepatitis, Chronic	14	15	7	15	3	6	5	14	11	36	42	19	187	9·09
Abscess and Ulcer	25	23	7	31	12	20	25	18	7	11	13	9	201	–
Wounds and Accidents	264	128	61	90	11	29	19	10	28	28	54	32	754	–
All other Diseases	35	50	27	68	42	57	38	32	38	82	160	50	679	–
	510	397	211	566	248	557	479	279	205	356	506	279	4,593	

In addition to admissions of the sick of detachments recently disembarked, the re-admissions of sick and wounded men collected at Calcutta previous to embarkation for England, are included in this table. The admissions from chronic disease, therefore, bear no relation except to the army as a whole; and as the sick were under observation for a limited period only, no special significance is to be attached to the mortality rate appended to the respective diseases. The ratio of mortality to admissions from acute diseases, will, in several instances, be found allied to the rates prevailing in Lower Bengal generally. In the case of heat apoplexy, however, a discrepancy is very apparent; and it may be remarked here, as applicable to the statistics of this disease throughout the series of tables, that from the fact of the various minor results of exposure to heat influence, as well as the graver, being returned under terms used indifferently for both, the importance of any manifestation of heat influence may be more correctly estimated by the absolute mortality, than by the mortality relative to the number treated.

EUROPEAN TROOPS, 1858—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in *Bengal* Proper during the Year 1858, and the prevalence of the principal Diseases in each Month of the Year.

Months.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	Hepatitis, Acute.	Hepatitis, Chronic.	All other Diseases.	Wounds and Accidents.
January -	2,501	228	9·12	7		4						1	1						1			
February -	2,975	191	6·44	19		16					2		1									
March -	2,524	235	9·33	9		7					1	1										
April -	2,844	252	8·89	14		9				1	1				2						1	
May -	2,925	325	11·12	30		11		1	1	3	4		3	1	4				1		2	
June -	4,519	343	7·59	52		25			2	8	3				12			1	1			
July -	3,852	434	11·29	81		55				1	18	1	3			1	1				1	
August	3,677	468	12·73	80		27				11	30		3	2	2		1	1			1	2
September -	4,199	403	9·60	66		2			1	7	32	1	5		3		2		9*	1	3	
October -	4,987	379	7·61	23		5					9		4				2			1	2	
November -	4,665	322	6·91	23		11			1	3	5	1	1			1						
December -	3,098	235	7·61	1							1											
						172	–	1	5	34	106	5	21	3	23	2	6	2	11	3	11	–
						Died per 1,000 of Average Strength.																
	3,564	318	8·93	405	113·63	48·26	–	·28	1·40	9·54	30·00	1·40	5·89	·84	6·45	·56	1·68	·56	3·08	·84	3·08	–

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Small-pox - -	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Intermittent Fevers -	22	1	4	16	34	10	56	76	124	105	59	40	547	76·90	1·45
Remittent Fevers - -	–	–	–	–	9	85	–	7	9	5	15	4	134		
Continued Fevers - -	52	63	50	209	477	381	342	188	147	41	83	27	2,060		
Ophthalmia - - -	15	6	11	12	8	8	14	8	13	7	19	8	129	3·62	–
Dysentery, Acute -	25	9	18	21	20	23	107	146	91	50	37	25	572	17·81	17·48
Dysentery, Chronic -	2	6	2	1	1	8	2	6	13	10	7	5	63		
Diarrhœa - - -	56	59	71	42	57	108	245	142	136	69	43	27	1,055	29·60	1·99
Cholera - - -	8	40	15	23	14	41	73	43	7	7	18	–	289	8·11	59·51
Rheumatism - - -	19	9	24	13	21	13	20	16	15	14	15	23	202	5·66	–
Venereal Diseases - -	97	58	108	60	62	79	85	86	70	55	127	86	973	27·30	–
Phthisis Pulmonalis -	2	–	1	3	2	4	2	10	–	4	2	3	33	·92	9·09
Heat Apoplexy - -	–	–	–	4	6	22	3	2	4	–	1	–	42	1·17	54·76
Delirium Tremens - -	1	–	–	–	2	1	1	–	3	1	7	7	23	·64	8·69
Epilepsy - - -	2	–	1	–	2	2	4	–	4	2	–	2	19	·53	–
Respiratory Diseases -	32	15	26	10	19	21	26	30	27	35	25	21	287	8·05	2·09
Hepatitis, Acute - -	10	4	1	1	6	10	5	22	25	10	14	7	115	5·10	7·69
Hepatitis, Chronic - -	7	9	5	–	4	4	5	6	9	4	10	4	67		
Abscess and Ulcer - -	39	25	36	31	53	83	100	52	57	60	55	43	634	17·78	–
Wounds and Accidents -	20	12	16	22	11	20	17	12	16	23	26	27	222	6·22	–
All other Diseases - -	46	26	58	42	71	87	111	73	84	220	57	56	931	26·12	–
	455	342	447	510	879	1,010	1,218	925	854	722	620	415	8,397		
	Admitted per Cent. of Average Strength in each Month.														
	18·19	11·50	17·71	17·93	30·05	22·35	31·62	25·15	20·33	14·47	13·29	13·39	235·75		

The constant variation in the strength of the depôts in Lower Bengal has probably led to some irregularities in drawing up the returns for certain months. The low sick rate of June is due to a great increase in the strength of the Dum-Dum depôt, while no corresponding increase in the number daily under treatment in hospital is shown in the returns of the month.

* In his annual report for the year, the medical officer who returns these deaths explains that all were cases of dysentery, running to a fatal termination by complication with abscess of the liver. They should, therefore, properly have appeared under the head of dysentery.

EUROPEAN TROOPS, 1858—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Dinapore*, *Benares*, and *Oude* Districts, during the Year 1858, and the prevalence of the principal Diseases in each Month of the Year.

Months.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	Hepatitis, Acute.	Hepatitis, Chronic.	All other Diseases.	Wounds and Accidents.
January -	17,516	944	5·39	48	–	–	–	2	5	2	18	–	4	–	–	–	7	–	2	–	–	8
February -	18,397	926	5·03	20	–	–	1	–	3	4	3	–	–	3	1	–	1	1	1	–	–	2
March -	18,349	1,266	6·90	120	–	–	3	1	3	13	17	2	4	–	1	–	2	–	1	2	4	67
April -	15,169	1,891	12·46	146	–	3	19	–	16	32	33	4	10	–	3	–	1	–	7	1	2	15
May -	15,136	2,306	15·23	491	–	8	24	2	17	64	60	7	16	1	251	2	2	–	5	2	11	19
June -	14,150	2,462	17·40	246	–	–	4	1	9	34	31	7	14	3	117	–	8	3	2	5	4	4
July -	16,172	2,270	14·03	102	–	2	–	2	6	13	30	5	7	3	14	2	–	1	8	4	4	1
August -	16,796	2,382	14·18	193	–	4	–	–	6	18	103	7	19	5	3	–	3	–	12	6	7	–
September	16,971	2,679	15·79	235	–	1	–	6	3	34	115	7	25	–	13	2	5	–	14	–	8	2
October -	17,584	2,449	13·93	163	–	1	–	10	6	17	68	8	24	2	1	2	2	1	12	1	7	1
November	21,463	1,829	8·52	109	–	–	–	2	12	12	32	1	6	4	1	–	7	–	11	3	9	9
December -	24,070	1,876	7·80	86	–	2	–	–	3	8	33	5	5	1	–	–	5	1	5	7	5	6
						21	51	26	89	251	543	53	134	22	405	8	43	7	80	31	61	134
						Died per 1,000 of Average Strength.																
	17,648	1,940	11·00	1,959	111·00	1·19	2·85	1·47	5·05	14·22	30·70	3·00	7·59	1·24	23·00	·45	2·44	·40	4·53	1·76	3·46	7·65

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Small-pox	–	9	21	107	40	21	6	–		–	–	7	211	1·19	24·17
Intermitent Fevers	129	147	203	327	241	250	214	286	444	666	381	305	3,593		
Remittent Fevers	18	52	222	385	511	699	350	331	242	173	114	86	3,183	105·36	1·97
Continued Fevers	58	174	523	1,285	2,182	2,467	1,513	1,232	1,175	737	288	185	11,819		
Ophthalmia	43	97	107	101	62	62	112	99	79	108	90	146	1,106	6·26	–
Dysentery, Acute	72	75	157	323	227	189	286	785	608	521	315	307	3,865	24·03	14·05
Dysentery, Chronic	9	19	26	27	32	27	24	44	52	54	24	38	376		
Diarrhœa	135	203	455	549	570	368	609	812	595	445	297	282	5,320	30·14	2·51
Cholera	1	1	16	15	17	11	8	96	4	1	–	5	95	·54	22·10
Rheumatism	53	94	90	84	60	48	111	117	96	152	130	187	1,222	6·92	–
Venereal Diseases	196	294	280	264	283	243	415	459	446	495	578	858	4,811	27·26	–
Phthisis Pulmonalis	1	4	1	1	9	21	4	12	11	9	6	6	95	·54	23·16
Heat Apoplexy	1	2	3	5	620	364	59	16	23	5	2	4	1,104	6·26	36·68
Delirium Tremens	4	5	3	2	5	8	5	10	11	16	10	6	85	·48	9·41
Epilepsy	–	3	1	4	3	4	7	9	2	7	7	10	57	·32	–
Respiratory Diseases	87	102	126	140	110	72	105	107	101	119	165	228	1,462	8·30	2·94
Hepatitis, Acute	19	16	37	61	40	62	52	77	92	99	101	95	751	6·04	10·41
Hepatitis, Chronic	3	11	26	19	19	31	26	39	32	51	27	31	315		
Abscess and Ulcer	112	167	233	225	273	235	286	281	276	297	245	311	2,941	16·66	–
Wounds and Accidents	83	209	661	264	138	120	111	153	109	206	211	267	2,532	14·35	–
All other Diseases	91	135	176	217	391	285	332	308	274	294	214	311	3,028	17·16	–
	1,115	1,819	3,367	4,405	5,833	5,587	4,645	5,193	4,672	4,455	3,205	3,675	47,971		
	Admitted per Cent. of Average Strength in each Month.														
	6·36	9·88	18·35	29·04	38·53	39·48	28·71	30·93	27·51	25·33	14·93	15·27	271·81		

EUROPEAN TROOPS, 1858—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Allahabad*, *Meerut*, *Rohilcund* and *Agra* Districts, during the Year 1858, and the prevalence of the principal Diseases in each Month of the Year.

Months.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	Hepatitis, Acute.	Hepatitis, Chronic.	Other Diseases.	Wounds and Accidents.
January	8,718	1,226	14·07	52		3	2	1	1	2	15	1	3	3	1	1	3		9		2	7
February	8,604	1,075	12·51	44		1		3	1	4	13	1	8	1	1		3		3		1	8
March	10,045	1,153	11·48	51		5	2	2	2	7	18		4				3		1	1	3	3
April	14,338	1,462	10·20	124		2	10	2	13	23	34	4	13	4	6		1		3		3	6
May	15,527	1,908	12·30	360		1	4	1	27	62	41	2	10	2	164	3	6	1	6	4	13	14
June	14,674	2,064	14·06	157		1	2	2	7	27	27	1	6	1	60		4		6	5	8	1
July	13,695	1,928	14·08	106		4		2	13	10	17	4	5	1	26	1	4		7	5	6	1
August	13,580	1,966	14·48	95		3		1	12	6	47	3	10	2		1	2	1	1	4	2	1
September	14,174	2,107	14·86	131		1		4	11	6	61	2	17	5	2		1		11	4	5	1
October	13,951	1,886	13·52	86		1		3	12	12	24	2	9	5	1	2	4	1	5	1	3	1
November	9,667	1,281	13·25	50				2	2	2	11	9	6	1			3	1	4	2	5	2
December	10,798	1,040	9·64	47				3	2	2	13	2	4	2	1	1	3	1	3	4	2	
						20	20	25	103	163	321	30	95	26	261	9	34	5	59	30	53	49
						Died per 1,000 of Average Strength.																
	12,315	1,591	12·92	1,203	105·80	1·62	1·62	2·03	8·36	13·23	26·06	2·43	7·71	2·11	21·20	·73	2·76	·40	4·80	2·43	4·30	4·00

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Small-pox	–	1	6	38	16	18	1	–	–	–	–	1	81	·65	24·70
Intermittent Fevers	342	283	474	608	1,170	1,070	1,112	1,258	1,125	1,166	607	371	9,586	173·40	1·36
Remittent Fevers	6	21	27	326	420	696	686	605	384	286	61	15	3,533		
Continued Fevers	153	159	261	741	1,384	1,365	1,315	1,299	776	430	224	128	8,235		
Ophthalmia	46	70	101	89	54	81	92	127	72	104	61	53	950	7·71	–
Dysentery, Acute	145	112	111	206	174	162	153	372	353	255	174	105	2,322	21·92	13·00
Dysentery, Chronic	38	28	18	31	15	20	31	20	20	77	45	35	378		
Diarrhœa	251	157	249	345	363	309	339	581	499	389	167	126	3,775	30·65	2·51
Cholera	4	1	6	2	1	3	11	5	16	4	2	–	55	·45	38·18
Rheumatism	67	91	89	86	63	77	99	91	78	75	65	68	949	7·70	–
Venereal Diseases	316	260	342	262	197	242	245	253	232	341	283	323	3,296	26·76	–
Phthisis Pulmonalis	4	6	5	6	5	9	13	7	5	12	8	4	84	·63	31·00
Heat Apoplexy	–	1	2	9	291	172	76	5	5	4	–	2	567	4·60	46·03
Delirium Tremens	9	–	2	3	7	10	22	9	10	12	9	7	100	·81	9·00
Epilepsy	5	6	4	2	6	2	7	9	9	11	4	4	69	·56	–
Respiratory Diseases	113	139	92	119	87	112	128	125	88	115	95	92	1,305	10·60	2·60
Hepatitis, Acute	29	54	38	37	71	69	63	58	75	88	54	40	676	8·12	8·90
Hepatitis, Chronic	17	11	17	21	19	27	28	31	36	44	35	38	324		
Abscess and Ulcer	168	149	167	185	267	304	391	298	234	199	125	97	2,584	20·98	–
Wounds and Accidents	405	209	215	260	248	116	145	126	129	146	186	146	2,331	18·92	–
All other Diseases	172	171	193	251	324	475	449	456	374	391	224	184	3,664	29·75	–
	2,290	1,929	2,419	3,627	5,182	5,339	5,406	5,735	4,520	4,149	2,429	1,839	44,864		
	Admitted per Cent. of Average Strength in each Month.														
	26·28	22·42	24·08	25·29	33·37	36·38	39·47	42·23	31·88	29·74	25·12	17·03	364·30		

The high sick-rates of January and February are due to re-admissions into the hospitals of this Division of the sick of the army of the Commander in Chief, who were left behind on the occasion of the advance into Oude. The sick-rates for the Oude Province are proportionately diminished.

EUROPEAN TROOPS, 1858—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Punjab* during the Year 1858, and the Prevalence of the principal Diseases in each Month of the Year.

Months.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Disease	Hepatitis, Acute.	Hepatitis, Chronic.	Other Diseases.	Wounds and Accidents.
January	7,040	664	9·43	32	–	–	–	7	3	1	5	–	6	1	–	1	3	–	1	1	3	–
February	6,714	538	8·02	8	–	–	–	1	3	–	1	2	1	1	–	–	2	–	–	–	–	–
March	9,311	624	6·70	12	–	–	–	2	1	2	2	–	1	1	–	–	1	–	1	1	–	1
April	10,265	687	6·70	12	–	–	–	–	–	4	1	–	–	1	2	1	2	–	–	–	1	–
May	10,599	1,235	11·65	60	–	4	3	4	2	14	12	3	3	1	6	1	1	1	1	1	4	–
June	11,398	1,123	9·85	43	–	1	–	4	–	3	4	2	5	2	12	–	3	–	1	1	4	1
July	11,276	1,056	9·37	84	–	28	–	4	2	7	7	1	5	3	20	1	1	–	2	1	2	–
August	11,805	1,168	9·90	110	–	19	–	4	7	5	11	6	2	3	40	3	2	1	1	1	5	–
September	10,897	936	8·60	68	–	27	–	1	3	7	13	3	1	1	1	1	–	2	2	1	4	1
October	10,879	718	6·60	30	–	5	–	–	2	5	6	2	1	1	1	1	–	–	2	–	4	–
November	10,596	580	5·47	28	–	3	–	3	2	1	5	4	1	2	–	–	–	–	3	–	4	–
December	12,145	643	5·30	21	–	–	1	–	–	1	3	2	1	2	1	–	2	–	2	1	5	–
						87	4	29	25	50	70	25	26	18	83	9	15	4	16	8	36	3
						Died per 1,000 of Average Strength.																
	10,244	831	8·11	508	49·59	8·50	·39	2·83	2·44	4·88	6·83	2·44	2·53	1·75	8·10	·88	1·46	·39	1·56	·78	3·51	·29

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Small-pox	1	–	–	–	3	1	–	–	–	–	6	9	20	·19	20·00
Intermittent Fevers	1,174	852	653	1,170	2,272	1,816	1,619	1,423	603	494	325	267	12,668	*	
Remittent Fevers	8	6	8	21	56	44	28	119	95	29	23	16	453	164·37	·63
Continued Fevers	12	21	53	228	1,008	312	467	825	375	193	100	123	3,717		
Ophthalmia	10	21	34	31	49	48	42	62	49	34	34	33	447	4·36	–
Dysentery, Acute	25	33	42	35	58	68	59	93	113	101	52	45	724	8·14	11·39
Dysentery, Chronic	8	5	7	5	15	12	6	15	12	11	3	11	110		
Diarrhœa	64	58	39	135	201	170	243	292	224	131	127	106	1,790	17·47	1·45
Cholera	–	–	–	–	8	2	43	35	35	4	3	–	130	1·27	66·92
Rheumatism	76	85	107	90	111	94	113	92	93	69	83	112	1,125	11·00	–
Venereal Diseases	104	129	181	206	188	168	173	153	155	168	176	204	2,005	20·00	–
Phthisis Pulmonalis	2	4	1	1	3	10	4	13	8	10	3	5	64	·62	28·12
Heat Apoplexy	–	–	1	3	10	15	39	45	7	1	–	1	122	1·19	68·03
Delirium Tremens	8	7	2	2	3	4	2	10	3	5	3	4	53	·51	17·00
Epilepsy	–	1	3	2	2	5	7	7	1	7	3	5	43	·42	
Respiratory Diseases	145	119	74	81	105	87	87	103	73	80	87	116	1,157	11·30	1·30
Hepatitis, Acute	20	20	11	20	31	32	39	34	21	33	34	35	330	4·66	5·02
Hepatitis, Chronic	3	7	4	6	8	20	18	23	20	13	10	16	148		
Abscess and Ulcer	48	68	70	105	184	177	230	203	199	112	113	117	1,626	15·87	–
Wounds and Accidents	79	89	109	110	106	112	93	101	76	95	99	142	1,211	11·82	–
All other Diseases	139	125	134	178	294	227	287	340	216	170	143	165	2,418	23·60	–
	1,926	1,650	1,533	2,429	4,715	3,424	3,599	3,988	2,378	1,760	1,427	1,532	30,361		
	Admitted per Cent. of Average Strength in each Month.														
	27·35	24·57	16·46	23·65	44·48	30·04	31·91	33·79	21·82	16·17	13·47	12·61	296·38		

EUROPEAN TROOPS, 1858—*continued.*

COMPARATIVE STATEMENT of the Ratios of SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the various PROVINCES of the *Bengal* Presidency, during the Year 1858.

DISEASES.	BENGAL PROPER.			DINAPORE, BENARES, AND OUDE.			CAWNPORE, MEERUT, AND AGRA.			PUNJAB.			BENGAL PRESIDENCY.		
	Average Strength - - - 3,564 Daily Sick per Cent. of Strength 8·93 Admitted per Cent. of Strength - 235·75 Died per 1,000 of Strength : A. From Cholera - - 48·26 B. From all Causes - - 113·63			Average Strength - - - 17,648 Daily Sick per Cent. of Strength 11·00 Admitted per Cent. of Strength - 271·81 Died per 1,000 of Strength : A. From Cholera - - 1·19 B. From all Causes - - 111·09			Average Strength - - - 12,315 Daily Sick per Cent. of Strength 12·92 Admitted per Cent. of Strength - 364·30 Died per 1,000 of Strength : A. From Cholera - - 1·62 B. From all Causes - - 105·80			Average Strength - - - 10,244 Daily Sick per Cent. of Strength 8·11 Admitted per Cent. of Strength - 296·38 Died per 1,000 of Strength : A. From Cholera - - 8·50 B. From all Causes - - 49·50			Average Strength - - - 43,771 Daily Sick per Cent. of Strength 11·26 Admitted per Cent. of Strength - 311·13 Died per 1,000 of Strength : A. From Cholera - - 9·16 B. From all Causes - - 100·55		
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.
Cholera - - - -	8·11	59·51	48·26	·54	22·10	1·19	·45	38·18	1·62	1·27	66·92	8·50	1·68	54·33	9·16
Small-pox - - -	- - -	–	- - -	1·19	24·17	2·85	·65	24·70	1·62	·19	20·00	·39	·71	23·96	1·71
Fevers - - - -	76·90	1·45	11·22	105·36	1·97	20·74	173·40	1·36	23·62	164·37	·63	10·15	137·88	1·34	18·57
Dysentery - - -	17·81	17·48	31·40	24·03	14·05	33·70	21·92	13·00	28·49	8·14	11·39	9·27	20·26	13·39	27·14
Diarrhœa - - - -	29·60	1·99	5·89	30·14	2·51	7·59	30·65	2·51	7·71	17·47	1·45	2·53	27·90	2·34	6·53
Hepatitis - - - -	5·10	7·69	3·92	6·04	10·41	6·29	8·12	8·90	7·23	4·66	5·02	2·34	6·70	8·72	5·84
Ophthalmia - - -	3·62	–	- -	6·26	–	- -	7·71	–	- -	4·36	–	- -	6·37	–	–
Rheumatism - - -	5·66	–	- -	6·92	–	- -	7·70	–	- -	11·00	–	- -	8·41	–	–
Venereal Diseases - -	27·30	–	- -	27·26	–	- -	26·76	–	- -	20·00	–	- -	26·12	–	–
Phthisis Pulmonalis - -	·92	9·09	·84	·54	23·16	1·24	·68	31·00	2·11	·62	28·12	1·75	·81	26·89	2·19
Heat Apoplexy - - -	1·17	54·76	6·45	6·26	36·68	23·00	4·60	46·03	21·20	1·19	68·03	8·10	4·29	41·36	17·77
Delirium Tremens - -	·64	8·69	·56	·48	9·41	·45	·81	9·00	·73	·51	17·00	·88	·61	10·50	·64
Epilepsy - - - -	·53	–	- -	·32	–	- -	·56	–	- -	·42	–	- -	·50	–	–
Respiratory Diseases - -	8·05	2·09	1·68	8·30	2·94	2·44	10·60	2·60	2·76	1 ·30	1·30	1·46	10·05	2·41	2·42
Abscess and Ulcer - -	17·78	–	- -	16·66	–	- -	20·98	–	- -	15·87	–	- -	18·24	–	–
Wounds and Accidents -	6·22	–	- -	14·35	–	7·65	18·92	–	4·00	11·82	–	- -	16·10	–	4·34
All other Diseases - -	26·12	–	3·64	17·16	–	3·86	29·75	–	4·70	23·60	–	4·19	24·50	·85	4·21
	235·75	–	113·63	271·81	–	111·00	364·30	–	105·80	296·38	–	49·59	311·13	–	100·55

EUROPEAN TROOPS, 1858—*continued.*

TABLE showing the PREVALENCE of SMALL-POX in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATION.	Average Strength for Twelve Months.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.				
Presidency Hospitals -	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-
Fort William - - -	770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dum-Dum - - -	745	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barrackpore - - -	1,272	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chinsurah Depôt - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Raneegunge Depôt - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Berhampore - - -	281	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3,564	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Darjeeling - - -	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hazareebaugh - -	211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dinapore - - -	877	-	4	-	2	-	-	-	-	-	-	-	-	6	-	3	-
Shahabad - - -	1,352	-	-	-	1	1	1	2	-	-	-	-	-	5	-	1	-
Sasseram - - -	340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazeepore - - -	435	-	-	3	3	1	-	-	-	-	-	-	-	7	-	2	-
Benares - - -	511	-	3	2	7	6	-	-	-	-	-	-	-	18	-	4	-
Chunar - - -	46	-	-	-	-	1	-	-	-	-	-	-	-	1	-	1	-
Azimghur - - -	504	-	-	-	4	1	-	-	-	-	-	-	-	5	-	2	-
Goruckpore District -	1,077	-	2	-	4	-	-	-	-	-	-	-	-	6	-	-	-
Oude - - - - -	12,158	-	-	16	86	30	20	4	-	-	-	-	7	163	-	38	-
	17,648	-	9	21	107	40	21	6	-	-	-	-	7	211	1·19	51	2·85
Allahabad and Cawnpore Districts - - -	4,788	-	-	6	22	10	2	1	-	-	-	-	-	41	-	9	-
Rohilcund - - -	3,285	-	-	-	16	6	16	-	-	-	-	-	-	38	-	9	-
Meerut - - - -	1,528	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Delhi - - - -	1,411	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Agra - - - -	883	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	-
Agra District - -	420	-	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-
	12,315	-	1	6	38	16	18	1	-	-	-	-	1	81	·65	20	1·62
Umballa - - -	941	-	-	-	-	2	-	-	-	-	-	-	-	2	-	2	-
Dugshaie - - -	176	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subathoo - - -	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kussowlie - - -	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phillour - - -	110	-	-	-	-	1	-	-	-	-	-	-	-	1	-	1	-
Jullundur - - -	898	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-
Ferozepore - - -	740	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-
Meean Meer - - -	1,317	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-
Lahore Citadel - -	64	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-
Umritsir - - -	361	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Govindghur - - -	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mooltan - - -	233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dera Ismael Khan - -	148	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kangra - - - -	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sealkote - - -	896	-	-	-	-	-	-	-	-	-	-	1	1	2	-	1	-
Dhurramsalla - -	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rawul Pindee - -	1,039	1	-	-	-	-	-	-	-	-	-	1	1	3	-	-	-
Attock - - - -	196	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nowshera - - -	412	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Campbellpore - -	319	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peshawur - - -	2,027	-	-	-	-	-	-	-	-	-	-	2	4	6	-	-	-
Murree - - - -	114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10,244	1	-	-	-	3	1	-	-	-	-	6	9	20	·19	4	·39
BENGAL PRESIDENCY -	43,771	1	10	27	146	59	40	7	-	-	-	6	17	313	·71	75	1·71

EUROPEAN TROOPS, 1858—*continued.*

TABLE showing the PREVALENCE of CHOLERA in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATION.	Average Strength for Twelve Months.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.				
Presidency Hospitals	770	–	5	23	51	2	35	32	13	–	4	3	1	169	–	101	–
Fort William	770	1	2	12	19	5	11	20	14	–	4	4	–	92	–	55	–
Dum-Dum	745	1	–	–	–	–	8	13	18	1	3	2	–	46	–	30	–
Barrackpore	1,272	–	2	–	–	3	2	5	2	–	–	–	–	14	–	5	–
Chinsurah Depôt	–	5	–	–	–	1	20	32	1	1	–	–	–	60	–	45	–
Raneegunge and G. T. Road	–	1	36	3	1	5	–	3	1	–	–	11	–	61	–	30	–
Berhampore	281	–	–	–	3	–	–	–	7	5	–	1	–	16	–	7	–
	3,564	8	40	15	23	14	41	73	43	7	7	18	–	289	8·11	172	48·26
Darjeeling	137	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hazareebaugh	211	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–
Dinapore	877	–	–	1	3	–	2	–	2	–	–	–	2	10	–	1	–
Shahabad	1,352	–	–	–	1	3	–	–	11	2	–	–	–	17	–	5	–
Sasseram	340	–	–	–	2	1	–	–	–	–	–	–	–	3	–	–	–
Ghazeepore	435	–	–	1	2	3	1	–	–	–	–	–	–	7	–	3	–
Benares	511	1	–	7	1	3	5	4	–	–	–	–	–	21	–	7	–
Chunar	46	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–
Azimghur	504	–	–	–	–	2	–	2	–	–	–	–	–	4	–	–	–
Goruckpore District	1,077	–	–	2	–	–	1	1	–	–	–	–	–	4	–	–	–
Oude	12,158	–	1	5	6	5	2	–	3	2	1	–	2	27	–	5	–
	17,648	1	1	16	15	17	11	8	16	4	1	–	5	95	·54	21	1·19
Allahabad and Cawnpore Districts	4,788	4	1	5	2	1	2	2	–	–	4	2	–	23	–	11	–
Rohilcund	3,285	–	–	–	–	–	–	5	2	–	–	–	–	7	–	1	–
Meerut	1,528	–	–	–	–	–	–	3	1	–	–	–	–	4	–	3	–
Delhi	1,411	–	–	–	–	–	–	1	–	11	–	–	–	12	–	1	–
Agra	883	–	–	–	–	–	1	–	2	5	–	–	–	8	–	3	–
Agra District	420	–	–	1	–	–	–	–	–	–	–	–	–	1	–	1	–
	12,315	4	1	6	2	1	3	11	5	16	4	2	–	55	·45	20	1·62
Umballa	941	–	–	–	–	2	1	–	–	–	–	–	–	3	–	1	–
Dugshaie	176	–	–	–	–	2	1	1	–	–	–	–	–	4	–	1	–
Subathoo	59	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie	46	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phillour	110	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur	898	–	–	–	–	–	–	–	23	11	–	–	–	34	–	22	–
Ferozepoor	740	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meean Meer	1,317	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Camp Kamokee	–	–	–	–	–	–	–	–	–	24	–	–	–	24	–	14	–
Lahore Citadel	64	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Umritsir	361	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Govindghur	123	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mooltan	233	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera Ismael Khan	148	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Kangra	18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sealkote	896	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dhurramsalla	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawul Pindee District	1,039	–	–	–	–	4	–	2	6	–	–	–	–	12	–	8	–
Attock	196	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowshera	412	–	–	–	–	–	–	–	2	–	–	–	–	2	–	2	–
Campbellpore	319	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peshawur	2,027	–	–	–	–	–	–	–	–	–	4	3	–	7	–	7	–
Muree	114	–	–	–	–	–	–	40	4	–	–	–	–	44	–	31	–
	10,244	–	–	–	–	8	2	43	35	35	4	3	–	130	1·27	87	8·50
BENGAL PRESIDENCY	43,371	13	47	60	91	42	92	167	112	62	20	26	6	738	1·68	401	9·16

EUROPEAN TROOPS, 1858—*continued.*

TABLE showing the Causes of Death and Invaliding.

TOTAL LOSS TO THE SERVICE BY DEATH AND INVALIDING, 6771. PER 1,000 OF AVERAGE STRENGTH, 154·66.

NUMBER OF MEN LOST TO THE SERVICE BY INVALIDING, 1,908.

CAUSES OF INVALIDING.	Number Invalided.	Invalided per 1,000 of Strength.
Tonsillitis	1	œ
Febris intermittens	122	5·41
„ remittens	19	
„ continua	96	
Morbi oculorum	61	1·39
Dysenteria et diarrhœa	248	5·66
Rheumatismus	191	4·36
Syphilis	38	1·01
Strictura urethræ	6	
Scorbutus	3	–
Anasarca	3	–
Scrofula	7	1·39
Phthisis pulmonalis	58	
Hæmoptysis	3	
Morbus Coxæ	2	–
Apoplexia	11	·57
Paralysis	14	
Delirium tremens	1	–
Mania	8	·55
Dementia	15	
Melancholia	1	
Epilepsia	15	·34
Cephalæa	6	–
Vertigo	1	–
Amaurosis	2	–
Otitis	2	–
Dysecœa	3	–
Neuralgia	1	–
Pericarditis	2	1·85
Morbus cordis	53	
Palpitatio	24	
Aneurisma	2	
Varix	5	–
Epistaxis	1	–
Bronchitis	59	1·58
Pleuritis	2	
Pneumonia	6	
Dyspnœa	2	
Pharyngitis	1	–
Hernia	6	–
Dyspepsia	17	–
Hæmorrhois	5	–
Fistula in ano	1	–
Splenitis	24	–
Hepatitis	204	4·66
Icterus	1	–
Ascites	7	–
Nephritis	6	–
Ischuria	1	–
Hæmaturia	1	–
Fistula in perineo	1	–
Varicocele	1	–
Orchitis	2	–
Periostitis	4	–
Necrosis	2	–
Caries	1	–
Contractura	8	–
Exostosis	1	–
Paronychia	1	–
Abscessus	6	–
Ulcus	11	–
Tumor	2	–
Morbi cutis	1	–
Debilitas (worn out)	88	–
Ambustio	1	6·00
Luxatura	2	
Subluxatio	1	
Fractura	11	
Contusio	9	
Concussio cerebri	1	
Vulnus sclopetarium	185	
„ incisum	27	
Amputatio	24	
Causes not specified	153	–
Ratio per 1,000 for Invaliding from causes not specially calculated	–	8·82
	1,908	43·59

NUMBER OF MEN LOST TO THE SERVICE BY DEATH, 4,863.

CAUSES OF DEATH.	Died in Hospital.	Died out of Hospital.	Died per 1,000 of Strength.
Variola	75	–	1·71
Varicella	1	–	–
Morbilli	2	–	–
Tonsillitis	3	–	–
Febris intermittens	81	–	18·57
„ remittens	223	–	
„ continua	509	–	
Ophthalmia	2	–	–
Erysipelas	7	–	–
Erythema	1	–	–
Gangrœna	2	–	–
Phagedæna	1	–	–
Anthrax	1	–	–
Phlegmon	1	–	–
Dysenteria	1,188	–	27·14
Diarrhœa	286	–	6·53
Cholera	401	5	9·27
Rheumatismus	13	–	–
Syphilis	9	–	–
Bubo	2	–	–
Strictura urethræ	2	–	–
Scorbutus	3	–	–
Ebriositas	6	3	–
Anœmia	1	–	–
Anasarca	3	–	–
Scirrhoma	1	–	–
Tumor	1	–	–
Scrofula	1	–	–
Phthisis pulmonalis	96	–	2·19
Hæmoptysis	6	–	–
Encephalitis	6	–	–
Apoplexia	778	163	21·50
Paralysis	8	–	–
Chorea	1	–	–
Delirium tremens	28	–	·64
Mania	3	–	–
Dementia	2	–	–
Epilepsia	1	–	–
Tetanus	2	–	–
Cephalœa	1	–	–
Morbus cordis	18	–	–
Aneurisma	1	4	·41
Epistaxis	1	–	
Laryngitis	1	–	
Catarrhus	33	–	2·35
Bronchitis	22	–	
Pneumonia	27	–	
Pleuritis	16	–	
Asthma	2	–	
Dyspnœa	2	–	–
Gastritis	7	–	–
Enteritis	5	–	–
Peritonitis	13	–	–
Hæmorrhois	1	–	–
Colica	4	–	–
Hæmatemesis	1	–	–
Fistula in ano	1	–	–
„ perineo	1	–	–
Splenitis	1	–	–
Hepatitis	256	–	–
Icterus	7	–	5·84
Ascites	4	–	–
Nephritis	1	–	–
Cystitis	1	–	–
Orchitis	1	–	–
Hydrocele	1	–	–
Synovitis	1	–	–
Ulcus	3	–	–
Abscessus	7	–	–
Asthenia et atrophia	13	–	–
Ambustio	32	–	
Amputatio	6	–	
Fractura	5	–	
Contusio	4	–	
Concussio	1	–	
„ cerebri	2	–	10·67
Accident	–	25	
Killed in Action	–	196	
Died of Wounds	140	–	
Drowned	–	49	
Suicide	–	7	
Found dead; cause of death unknown	–	10	–
Diseases not specified	1	–	–
Ratio per 1,000 for Deaths from causes not specially calculated	–	–	4·25
	4,401	462	111·07

The Causes of Death indicated in this Table are those specified in the Regimental Returns. There is reason to believe that in several instances return has been made of the original cause of admission into hospital, and not of the disease which was the immediate cause of death.

1859–1863.

1. Tables (p. 79 to 100).—Summaries for the whole or portions of the five-year period: General Statistics of Sickness and Mortality among European Soldiers, Women, and Children; the Native Army; and the Gaol Population of the Bengal Presidency.
2. Tables (p. 101 to 165).—Statements showing the Inefficiency and Loss of the European Army in each year of the period.

The STATISTICS of the ARMY for each year of the period are shown in a series of 13 Tables.

1. Shows the Sickness and Mortality of the European Army of the Presidency taken as a whole, and the prevalence of the chief diseases in each month of the year.
2. Shows the Statistics of that portion of the Army which has been stationed in Bengal Proper during the year.
3. The Statistics of the Behar Provinces, Benares, and Oude.
4. The Statistics of the Cawnpore, Rohilcund, and Meerut Districts.
5. The Statistics of the Agra District, and of Central India.
6. The Statistics of the Punjab.
7. A Comparative Statement of the Ratios of Sickness and Mortality in each of the above-mentioned Provinces.
8. The Daily Sick-rate of each Station in each month, and the Admission-rate and Death-rate of the year.
9. The Composition of the Admission-rate of each Station, and the extent to which it has been influenced by the prevalence of the chief diseases.

10 and 11. The distribution of Small-pox and Cholera for the year, and the prevalence of these epidemics in each month of the year.

12. The Composition of the Death-rate of each Station, and the detail of the chief diseases which have contributed to make up the sum of the total mortality.
13. The Total Loss of the Army by Death and Invaliding, and the causes of the loss of the year, shown in detail.

I. CONTENTS OF TABLES (pages 79 to 100).

SUMMARIES showing the Ratios of Sickness and Mortality for EUROPEAN SOLDIERS, WOMEN, and CHILDREN; for NATIVE TROOPS; and for PRISONERS.

EUROPEAN TROOPS.

Table (p. 79.)—1852–53 to 1856–57.—Ratios of Sickness, Mortality, and Invaliding in the European Army.
„ (p. 80.)—1859 to 1863.—Ratios of Sickness, Mortality, and Invaliding in the European Army.
„ (p. 81.) „ Statement showing the relative prevalence of the chief causes of sickness and mortality in the various Provinces of the Presidency in each year.
„ (p. 82.) „ The Admission-rate, Sick-rate, and Death-rate for the chief Military Stations of the Presidency in each year of the period.
„ (p. 83.) „ The Admission-rate of the Army for each month, and the number per cent. of the Strength inefficient from sickness in each month of each year of the period; also, the ratios indicating, on the Average of the five years, the comparative prevalence of the chief diseases in relation to the meteorological conditions of the months.

EUROPEAN ARMY, WOMEN, AND CHILDREN—NATIVE ARMY—GAOL POPULATION.

Table (p. 84.)—Comparative Statement showing the Composition of the Admission-rate and Death-rate, according to the System of Statistical Nomenclature now in use, for European Soldiers, Women, and Children; for Native Troops; and for Prisoners: the ratios for Europeans taken on the average of the four years 1860–63; for Natives, on the average of the three years 1861–63.

WOMEN.

„ (p. 85.)—The causes of Admissions into Hospital, and of Deaths, among WOMEN belonging to European Regiments, for the four years 1860 to 1863; and the Annual Ratio of Sickness and Mortality from the principal Diseases on the average of the same period.

CHILDREN.

„ (p. 86.)—The causes of Admissions into Hospital, and of Deaths, among CHILDREN belonging to European Regiments, for the four years 1860 to 1863; and the Annual Ratio of Sickness and Mortality from the principal Diseases on the average of the same period.

NATIVE ARMY.

Ratios of Sickness and Mortality for the NATIVE TROOPS serving in the Bengal Presidency, and in each of its Provinces, for the three years subsequent to the reorganization of the Army in 1860.

Table (p. 88.)—Ratios of Sickness and Mortality for the Native Army for the year 1861.
„ (p. 89.)— „ „ „ „ 1862.
„ (p. 90.)— „ „ „ „ 1863.

GAOLS.

Ratios of Sickness and Mortality for the GAOL POPULATION of the Bengal Presidency, shown also in relation to each Province.

Table (p. 91.)—Ratios of Sickness and Mortality for the Gaol Population for the year 1859.
„ (p. 92.) „ „ „ „ 1860.
„ (p. 93.) „ „ „ „ 1861.
„ (p. 94.) „ „ „ „ 1862.
„ (p. 95.) „ „ „ „ 1863.
„ (p. 96 to 100.)—Tabular Statements showing, in aggregate, the number of Admissions and Deaths from each Disease, as specified in the Annual Returns furnished by Batteries, Regiments, and Gaols. For European Troops the summary is given for each of the four years 1860–63; for Native Troops, for the three years 1861–63; and for Prisoners for the five years 1859–63.

EUROPEAN TROOPS, 1853-1857.

COMPARATIVE STATEMENT of the Ratios of Sickness, Mortality, and Invaliding for the European Troops on the Strength of the *Bengal* Presidency, including the Regiments serving in *Burmah* and *Pegu* during the Five Years previous to 31st March 1857.

DISEASES.	1852-53.				1853-54.				1854-55.				1855-56.				1856-57.			
	Average Strength - - - 20,865 Daily Sick per Cent. of Strength 9·29 Admitted per Cent. of Strength 239·32 *Died per 1,000 of Strength in Hospital* - - - - - *59·86* *Died per 1,000 of Strength out of Hospital* - - - *2·92* *Invalided per 1,000 of Strength* *27·30*				Average Strength - - - 21,505 Daily Sick per Cent. of Strength 7·78 Admitted per Cent. of Strength 188·68 *Died per 1,000 of Strength in Hospital* - - - - *46·64* *Died per 1,000 of Strength out of Hospital* - - - *2·00* *Invalided per 1,000 of Strength* *25·48*				Average Strength - - - 20,046 Daily Sick per Cent. of Strength 8·66 Admitted per Cent. of Strength 222·14 *Died per 1,000 of Strength in Hospital* - - - - *50·03* *Died per 1,000 of Strength out of Hospital* - - - *1·85* *Invalided per 1,000 of Strength* *23·94*				Average Strength - - - 19,885 Daily Sick per Cent. of Strength 8·17 Admitted per Cent. of Strength 224·67 *Died per 1,000 of Strength in Hospital* - - - - *33·14* *Died per 1,000 of Strength out of Hospital* - - - *1·41* *Invalided per 1,000 of Strength* *27·66*				Average Strength - - - 21,304 Daily Sick per Cent. of Strength 8·80 Admitted per Cent. of Strength 278·69 *Died per 1,000 of Strength in Hospital* - - - - *70·04* *Died per 1,000 of Strength out of Hospital* - - - *1·45* *Invalided per 1,000 of Strength* *32·63*			
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	*Invalided per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	*Invalided per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	*Invalided per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	*Invalided per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	*Invalided per 1,000 of Average Strength.*
Cholera - - -	3·39	36·72	*12·46*	–	1·97	61·00	*12·00*	–	·46	50·54	*2·35*	–	·55	50·00	*2·77*	–	6·16	53·62	*33·05*	–
Small-pox - - -	·23	26·53	*·62*	–	·13	24·14	*·32*	–	·06	15·39	*·10*	–	·05	11·11	*·05*	–	·12	20·00	*·24*	–
Fevers - - -	117·37	·98	*11·50*	*1·01*	81·41	·77	*6·28*	*1·21*	99·04	1·19	*11·82*	*1·15*	102·35	·58	*5·88*	*·70*	152·67	·49	*7·51*	*1·08*
Dysentery - - -	15·17	10·80	*16·39*	*3·69*	9·05	11·31	*10·69*	*1·35*	9·73	15·84	*15·41*	*2·15*	9·73	8·47	*8·25*	*1·86*	9·98	10·53	*10·51*	*2·02*
Diarrhœa - - -	12·18	2·79	*3·40*		12·35	2·52	*3·12*		17·39	2·34	*4·04*		14·38	3·01	*4·33*		16·87	2·20	*3·70*	
Hepatitis - - -	5·68	5·40	*3·07*	*2·45*	5·34	4·96	*2·65*	*2·42*	6·16	6·97	*4·29*	*3·34*	6·19	4·15	*2·56*	*2·97*	7·08	4·71	*3·34*	*4·23*
Ophthalmia - -	5·89	–	–	*1·58*	4·47	–	–	*1·44*	5·02	–	–	*·70*	4·53	–	–	*1·11*	4·54	–	–	*1·22*
Rheumatism - -	10·90	–	–	*4·65*	10·40	–	–	*3·53*	10·30	–	–	*3·39*	10·30	–	–	*3·22*	9·90	–	–	*5·31*
Venereal diseases -	20·36	–	–	*·48*	13·39	–	–	*1·21*	17·70	–	–	*·69*	17·96	–	–	*1·36*	14·95	–	–	*1·27*
Phthisis pulmonalis -	·50	42·72	*2·11*	*·34*	·40	51·16	*2·05*	*·37*	·43	50·59	*2·15*	*·60*	·48	40·21	*1·96*	*1·21*	·62	35·60	*2·21*	*1·08*
Heat apoplexy - -	·40	59·04	*2·35*	–	·38	57·83	*2·23*	–	·69	63·04	*4·34*	–	·25	73·00	*1·76*	–	·43	64·13	*2·77*	–
Delirium tremens -	·57	12·50	*·72*	–	·52	10·62	*·56*	–	·62	14·40	*·89*	–	·36	12·68	*·45*	–	·40	15·12	*·61*	–
Epilepsy - - -	·39	–	–	*·43*	·38	–	–	*·60*	·46	–	–	*·40*	·53	–	–	*·55*	·49	–	–	*·56*
Respiratory diseases -	8·00	2·33	*1·87*	*1·96*	7·90	1·88	*1·49*	*1·53*	7·93	1·01	*·80*	*1·35*	9·11	1·93	*1·76*	*1·56*	9·36	1·91	*1·78*	*1·38*
Abscess and ulcer -	7·64	–	–	–	6·74	–	–	–	13·58	–	–	–	13·44	–	–	–	11·82	–	–	–
Wounds and accidents -	7·83	–	–	*1·01*	6·46	–	–	*·98*	8·12	–	–	*·70*	9·56	–	–	*1·00*	7·97	–	–	*·80*
All other diseases -	22·82	–	*5·37*	*9·70*	27·39	1·92	*5·25*	*10·84*	24·45	1·57	*3·84*	*9·47*	24·90	1·35	*3·37*	*12·12*	25·33	1·71	*4·32*	*18·28*
	239·32	–	*59·86*	*27·30*	188·68	–	*46·64*	*25·48*	222·14	–	*50·03*	*23·94*	224·67	–	*33·14*	*27·66*	278·69	–	*70·04*	*32·63*

Note.—The words and figures printed in *italics* were printed in red in the original.

EUROPEAN TROOPS, 1859-63—*continued.*

COMPARATIVE STATEMENT of the Ratio of Sickness, Mortality, and Invaliding for the European Troops serving in the *Bengal* Presidency during the Five Years, 1859-63.

DISEASES.	1859. Average Strength 55,104; Daily Sick per Cent. of Strength 9·03; Admitted per Cent. of Strength 222·85; *Died per 1,000 of Strength in Hospital* 43·97; *Died per 1,000 of Strength out of Hospital* 1·38; *Invalided per 1,000 of Strength* *24·80				1860. Average Strength 48,901; Daily Sick per Cent. of Strength 8·39; Admitted per Cent. of Strength 205·15; *Died per 1,000 of Strength in Hospital* 35·64; *Died per 1,000 of Strength out of Hospital* 1·13; *Invalided per 1,000 of Strength* *44·09				1861. Average Strength 44,879; Daily Sick per Cent. of Strength 8·20; Admitted per Cent. of Strength 204·56; *Died per 1,000 of Strength in Hospital* 44·77; *Died per 1,000 of Strength out of Hospital* 1·16; *Invalided per 1,000 of Strength* 28·09				1862. Average Strength 42,980; Daily Sick per Cent. of Strength 7·68; Admitted per Cent. of Strength 197·08; *Died per 1,000 of Strength in Hospital* 26·82; *Died per 1,000 of Strength out of Hospital* 1·29; *Invalided per 1,000 of Strength* 31·50				1863. Average Strength 41,351; Daily Sick per Cent. of Strength 6·96; Admitted per Cent. of Strength 183·84; *Died per 1,000 of Strength in Hospital* 22·49; *Died per 1,000 of Strength out of Hospital* 2·59; *Invalided per 1,000 of Strength* 34·97			
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	*Invalided per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	*Invalided per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	*Invalided per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	*Invalided per 1,000 of Average Strength.*	Admitted per Cent. or Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	*Invalided per 1,000 of Average Strength.*
Cholera	1·68	50·17	*8·67*	–	2·26	53·25	*12·04*	–	3·71	64·04	*23·73*	–	1·57	61·28	*9·61*	–	·55	75·11	*4·09*	–
Small-pox	·22	14·75	*·32*	–	·34	14·63	*·49*	–	·52	18·53	*·96*	–	·03	15·40	*·04*	–	·11	22·22	*·24*	–
Fevers	79·21	·83	*6·58*	*1·92*	72·33	·67	*4·85*	*2·54*	71·52	·55	*3·97*	*1·96*	80·58	·41	*3·34*	*1·74*	74·07	·38	*3·28*	*2·01*
Dysentery	11·87	8·60	*10·20*	*2·32*	7·52	6·23	*4·68*	*4·38*	6·55	5·62	*3·67*	*2·54*	4·88	5·43	*2·66*	*1·46*	4·70	5·20	*2·48*	*1·59*
Diarrhœa	15·91	1·50	*2·38*		13·62	·70	*·96*		15·66	1·08	*1·69*		11·95	·76	*·91*		9·62	·83	*·79*	
Hepatitis	6·70	7·25	*4·86*	*3·37*	6·37	5·52	*3·52*	*6·50*	6·04	4·80	*2·89*	*3·81*	6·24	4·85	*3·03*	*4·84*	6·37	5·69	*3·64*	*5·18*
Ophthalmia	8·52	–	–	*1·47*	7·72	–	–	*3·31*	6·57	–	–	*1·96*	5·74	–	–	*1·68*	4·93	–	–	*1·81*
Rheumatism	8·11	–	–	*3·79*	8·02	–	–	*8·22*	8·58	–	–	*3·81*	8·71	–	–	*5·45*	9·17	–	–	*5·47*
Venereal diseases	35·90	–	–	*·71*	33·80	–	–	*1·39*	36·91	–	–	*·98*	31·81	–	–	*2·28*	28·17	–	–	*2·42*
Phthisis pulmonalis	·67	26·55	*1·78*	*1·16*	·63	27·12	*1·70*	*1·72*	·68	27·03	*1·85*	*1·66*	·66	28·27	*1·86*	*1·88*	·79	27·13	*2·15*	*2·03*
Heat apoplexy	·87	47·28	*4·10*	–	·62	41·52	*2·56*	–	·22	61·22	*1·34*	–	·18	64·56	*1·19*	–	·23	47·87	*1·09*	–
Delirium tremens	·92	7·46	*·69*	–	·81	9·62	*·77*	–	·46	9·75	*·45*	–	·32	14·00	*·44*	–	·36	13·24	*·48*	–
Epilepsy	·59	–	–	*·33*	·56	–	–	*·77*	·36	–	–	*·45*	·42	–	–	*·54*	·36	–	–	*·74*
Respiratory diseases	8·05	1·14	*·92*	*1·07*	8·06	1·14	*·92*	*1·45*	8·05	1·69	*1·36*	*1·34*	6·78	1·47	*1·00*	*·93*	7·18	1·31	*·94*	*1·22*
Abscess and ulcer	13·02	–	–	–	12·61	–	–	–	11·46	–	–	–	10·67	–	–	–	9·97	–	–	–
Wounds and accidents	9 94	–	*·36*	*1·32*	8·98	–	*·29*	*1·11*	8·65	–	*·16*	*·80*	8·51	–	*·16*	*·67*	9·34	–	*·31*	*·61*
All other diseases	20·67	·35	*3·11*	*7·34*	21·00	·34	*2·86*	*12·70*	18·63	·31	*2·70*	*8·88*	18·03	·33	*2·58*	*10·03*	17·92	·42	*3·00*	*11·89*
	222·85	–	*43·97*	**24·80*	205·15	–	*35·64*	**44·09*	204·56	–	*44·77*	*28·09*	197·08	–	*26·82*	*31·50*	183·84	–	*22·49*	*34·97*

* An average for the two years will more accurately represent for each, the extent of invaliding in 1859 and 1860. The change in the period of furnishing the Annual Returns of the Army, introduced from 1st January 1860, rendered necessary a special Return for the nine months from 1st April to 31st December 1859, as a substitute for the usual Annual Return of 1859; the invaliding of the two seasons has, in consequence, in many instances, been mixed up. On the average of the two years, 33·87 per 1,000 were invalided in 1859 and 1860.

Note.—The words and figures printed in *italics* were printed in red in the original.

EUROPEAN TROOPS, 1859-63—*continued.*

TABLE showing in a Comparative Form, the Extent of the PREVALENCE of the PRINCIPAL DISEASES, and the LOSS BY DEATH from the CHIEF CAUSES OF MORTALITY in each Year of the FIVE-YEAR PERIOD 1859-63, in the various PROVINCES of the BENGAL PRESIDENCY.

PROVINCE.		Daily Sick per Cent. of Average Strength.	Admitted per Cent. of Average Strength.	ADMITTED INTO HOSPITAL PER CENT. OF AVERAGE STRENGTH.										*Died in Hospital per 1,000 of Average Strength.*	*DIED IN HOSPITAL PER 1,000 OF AVERAGE STRENGTH.*									
				Cholera.	Heat Apoplexy.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Diseases of the Respiratory Organs.		*Cholera.*	*Small-pox.*	*Heat Apoplexy.*	*Fevers.*	*Dysentery.*	*Diarrhœa.*	*Hepatitis.*	*Phthisis Pulmonalis.*	*Respiratory Diseases.*	*Delirium Tremens.*	*All other Diseases.*
BENGAL PROPER	1859	6·91	188·25	4·35	·22	60·83	9·79	17·66	3·19	5·00	6·12	27·31	8·00	*50·98*	*23·49*	*·18*	*1·04*	*5·39*	*9·74*	*3·83*	*1·57*	*·87*	*·87*	*1·04*	*2·96*
	1860	8·06	217·77	2·78	·23	77·38	10·76	23·64	4·61	4·83	8·52	34·36	7·66	*39·04*	*14·88*	*·00*	*2·16*	*5·82*	*8·20*	*·22*	*3·02*	*·65*	*·86*	*1·08*	*2·16*
	1861	7·45	209·30	1·35	·19	58·80	15·13	25·59	4·85	6·97	10·00	29·68	7·67	*30·09*	*6·51*	*·00*	*1·08*	*4·61*	*7·86*	*·54*	*3·79*	*1·62*	*·81*	*·51*	*2·71*
	1862	6·35	149·41	·73	·20	46·28	4·76	13·75	4·85	3·29	7·04	26·25	6·23	*26·45*	*6·11*	*·00*	*2·85*	*3·25*	*2·44*	*·40*	*2·84*	*3·66*	*2·03*	*1·22*	*1·62*
	1863	6·71	170·84	·48	·16	59·17	10·04	12·25	6·18	3·96	7·34	19·65	9·25	*20·60*	*3·17*	*·53*	*1·06*	*3·17*	*4·74*	*·53*	*1·06*	*·53*	*·53*	*2·11*	*3·17*
DINAPORE, BENARES, AND OUDE	1859	10·92	239·03	1·12	·75	80·00	18·13	17·57	7·84	12·49	7·11	46·73	6·75	*50·21*	*5·55*	*·05*	*2·80*	*8·52*	*16·87*	*2·57*	*6·92*	*1·60*	*1·15*	*·63*	*3·55*
	1860	9·97	226·64	3·28	·49	86·04	9·98	11·64	7·89	8·00	7·34	44·92	6·34	*44·28*	*19·03*	*·27*	*2·75*	*5·42*	*4·71*	*1·07*	*3·92*	*1·95*	*·89*	*1·07*	*3·20*
	1861	7·65	161·00	·26	·15	43·11	5·81	8·94	6·32	6·16	7·90	38·40	6·84	*17·50*	*1·04*	*·41*	*·84*	*2·27*	*2·38*	*·62*	*2·69*	*1·97*	*1·45*	*·84*	*3·01*
	1862	6·85	151·56	·11	·02	44·16	4·59	8·56	4·74	5·52	9·18	32·69	6·42	*13·97*	*·11*	*·11*	*·00*	*3·35*	*2·12*	*·11*	*3·02*	*1·34*	*1·01*	*·22*	*2·57*
	1863	6·59	157·62	1·12	·13	47·57	4·51	9·61	5·95	5·0	9·08	30·10	6·88	*21·74*	*7·63*	*·28*	*·58*	*1·40*	*1·51*	*·28*	*4·62*	*1·85*	*1·15*	*·28*	*2·31*
CAWNPORE AND MEERUT	1859	9·54	240·00	3·46	1·28	80·43	12·80	17·75	8 21	8·88	7·58	35·66	8·07	*57·78*	*19·43*	*·33*	*7·20*	*6·61*	*9·13*	*3·01*	*4·77*	*1·67*	*·38*	*·83*	*4·18*
	1860	8·54	211·50	1·73	·79	69·27	6·79	13·86	6·62	7·66	8·38	32·54	7·27	*37·62*	*8·61*	*1·45*	*3·08*	*5·70*	*4·71*	*1·90*	*4·81*	*1·72*	*·99*	*·63*	*3·98*
	1861	10·44	210·59	3·31	·15	51·03	7·60	19·08	8·43	7·81	9·66	51·58	8·16	*50·30*	*21·78*	*2·08*	*1·68*	*6·04*	*4·96*	*3·36*	*3·17*	*2·37*	*1·58*	*·50*	*2·27*
	1862	9·27	184·19	·59	·22	58·07	5·11	12·12	7·54	7·02	9·87	37·09	6·76	*22·33*	*3·67*	*·00*	*1·10*	*2·76*	*2·96*	*1·10*	*3·97*	*1·73*	*·92*	*·52*	*3·26*
	1863	7·99	163·45	·87	·25	46·23	4·59	10·46	5·73	5·46	9·35	32·89	7·34	*28·78*	*7·61*	*·65*	*1·30*	*2·60*	*2·83*	*1·30*	*4·46*	*2·82*	*·76*	*·54*	*3·91*
AGRA AND CENTRAL INDIA	1859	8·43	285·00	1·02	1·22	153·65	10·69	21·11	6·14	8·20	5·37	30·53	10·29	*44·05*	*2·30*	*1·02*	*5·35*	*9·16*	*9·07*	*3·31*	*5·85*	*·51*	*2·03*	*1·02*	*3·51*
	1860	9·01	262·79	6·57	1·90	125·65	7·32	18·74	6·05	9·78	7·21	34·60	9·61	*63·13*	*32·82*	*·18*	*6·10*	*·72*	*6·45*	*1·25*	*3·76*	*1·25*	*1·07*	*·72*	*3·75*
	1861	9·58	295·08	6·04	·31	156·95	5·75	19·81	4·41	7·23	9·60	34·94	9·72	*66·15*	*41·21*	*·90*	*1·44*	*7·60*	*4·15*	*3·07*	*2·16*	*·90*	*1·80*	*·36*	*2·33*
	1862	8·84	267·63	3·86	·26	150·71	5·44	13·32	6·91	4·85	9·52	31·97	6·48	*47·52*	*26·90*	*·19*	*2·02*	*5·54*	*2·95*	*·92*	*2·77*	*1·66*	*1·29*	*·37*	*2·95*
	1863	6·79	190·15	·60	·18	73·82	5·98	10·91	5·33	3·84	11·25	34·17	8·32	*21·85*	*3·52*	*·18*	*1·09*	*3·64*	*3·10*	*·55*	*3·64*	*·91*	*1·46*	*·73*	*2·73*
PUNJAB	1859	6·54	177·23	·07	·75	64·58	3·97	10·38	4·58	4·63	10·22	27·09	8·65	*20·18*	*·00*	*·50*	*4·00*	*3·68*	*2·93*	*·81*	*2·87*	*2·00*	*·56*	*·37*	*2·43*
	1860	6·03	155·72	·04	·23	44·34	4·71	9·76	5·22	7·47	8·01	25·23	9·22	*14·20*	*·15*	*·25*	*·97*	*2·23*	*2·56*	*·25*	*2·01*	*1·25*	*·73*	*·42*	*2·32*
	1861	6·43	189·21	5·66	·28	74·45	4·11	13·43	4·93	5·42	7·36	28·10	8·03	*51·45*	*36·10*	*·82*	*1·45*	*2·20*	*2·20*	*1·01*	*2·83*	*1·20*	*1·07*	*·19*	*2·38*
	1862	6·69	210·25	2·28	·23	97·20	4·24	12·46	5·97	5·54	7·32	28·24	7·11	*27·75*	*12·74*	*·00*	*1·38*	*3·01*	*2·38*	*1·00*	*2·45*	*1·45*	*·69*	*·19*	*2·44*
	1863	6·48	206·99	·01	·30	107·57	3·89	8·08	7·07	4·88	8·21	22·67	6·38	*18·14*	*·13*	*·00*	*1·28*	*3·45*	*3·19*	*·89*	*2·74*	*1·92*	*·77*	*·32*	*3·45*

Note.—The words and figures printed in *italics* were printed in red in the original.

EUROPEAN TROOPS, 1859–63—*continued.*

COMPARATIVE STATEMENT of the ratios of SICKNESS and MORTALITY among the EUROPEAN TROOPS cantoned in the PRINCIPAL MILITARY STATIONS of the BENGAL PRESIDENCY, during the FIVE YEARS 1859–63.

PROVINCE.	STATION.	DAILY SICK PER CENT. OF THE AVERAGE STRENGTH.					ADMITTED INTO HOSPITAL PER CENT. OF STRENGTH.					*DIED PER 1,000 OF THE AVERAGE STRENGTH.*									
												1859.		*1860.*		*1861.*		*1862.*		*1863.*	
		1859.	1860.	1861.	1862.	1863.	1859.	1860.	1861.	1862.	1863.	*All Causes.*	*Cholera.*	*All Causes.*	*Cholera.*	*All Causes.*	*Cholera.*	*All Causes.*	*Cholera.*	*All Causes.*	*Cholera.*
BENGAL PROPER	Fort William	6·56	8·91	7·95	7·16	7·40	164·07	234·06	234·20	161·26	173·14	*25·94*	*6·87*	*51·75*	*33·39*	*21·78*	*8·52*	*35·23*	*14·77*	*22·82*	*5·37*
	Dum-Dum	7·36	6·68	7·22	–	7·30	223·52	205·80	247·70	–	116·20	*85·04*	*47·80*	*39·45*	*4·83*	*30·00*	*4·98*	–	–	*12·35*	*1·54*
	Barrackpore	6·63	8·70	8·67	6·10	4·41	185·22	234·31	176·33	119·29	169·02	*44·82*	*25·21*	*25·99*	*8·00*	*35·93*	*5·26*	*16·63*	–	*20·50*	*2·28*
	Berhampore	6·16	8·93	6·00	5·07	7·75	190·34	250·74	185·82	114·18	201·33	*60·09*	*17·17*	*44·44*	–	*21·82*	–	*20·27*	*3·38*	*22·42*	–
DINAPORE, BENARES AND OUDE.	Hazareebaugh	9·04	8·76	12·53	3·54	9·80	329·73	197·25	253·20	69·03	172·06	*35·13*	*2·70*	*10·31*	*1·72*	*17·73*	–	*17·25*	*·91*	*21·92*	*4·11*
	Dinapore	11·53	11·69	6·00	7·94	6·30	259·22	260·09	183·27	192·36	160·32	*62·58*	*5·27*	*46·22*	*9·02*	*23·00*	*2·55*	*15·27*	–	*11·89*	*3·24*
	Benares and Rajghat	11·16	13·14	8·68	6·48	7·91	268·67	362·26	232·16	135·55	202·98	*72·24*	*19·77*	*73·94*	*22·80*	*26·76*	*4·46*	*13·14*	–	*42·15*	*28·93*
	Goruckpore	9·93	6·80	8·16	11·48	–	220·45	205·16	165·49	220·92	–	*44·78*	–	*34·39*	*14·33*	*19·85*	–	*55·90*	–	–	–
	Gondah	7·00	7·10	7·16	6·37	5·28	174·00	157·82	105·00	240·53	122·58	*46·79*	–	*24·87*	*18·65*	*18·46*	–	*5·08*	–	*12·27*	–
	Fyzabad	8·90	9·39	7·72	6·78	7·13	195·00	194·59	166·43	120·57	198·41	*55·88*	*2·23*	*33·21*	*19·00*	*4·42*	*·89*	*5·58*	–	*13·98*	–
	Rae Bareilly	9·74	5·57	3·85	5·11	3·87	221·27	157·87	84·26	127·10	68·65	*39·57*	*1·00*	*21·69*	*1·14*	*12·34*	–	*3·41*	–	*7·46*	–
	Lucknow	10·76	10·42	7·01	8·55	6·20	253·70	193·32	139·45	170·38	147·42	*48·50*	*12·65*	*31·14*	*9·93*	*14·00*	*1·35*	*15·29*	–	*28·51*	*10·33*
	Seetapore	9·63	7·64	8·21	7·92	5·20	202·11	142·92	147·65	162·54	127·19	*29·57*	–	*18·66*	*2·95*	*14·66*	–	*8·25*	–	*6·76*	–
CAWNPORE AND MEERUT.	Allahabad	8·19	8·80	9·38	9·03	9·01	265·45	255·81	244·87	217·34	167·24	*105·43*	*51·52*	*46·34*	*10·97*	*47·77*	*16·44*	*18·97*	–	*78·75*	*41·75*
	Cawnpore	10·86	12·77	10·00	6·04	5·94	300·08	275·24	211·70	164·65	137·78	*98·40*	*39·36*	*54·55*	*19·54*	*60·16*	*28·45*	*14·30*	–	*39·59*	*20·65*
	Futtehghur	8·28	7·89	7·83	10·20	8·82	192·20	213·99	131·57	182·88	128·04	*14·85*	–	*10·36*	–	*23·04*	*11·52*	*18·22*	–	*8·82*	–
	Shahjehanpore	6·54	7·61	7·75	7·36	5·94	113·37	110·58	86·10	112·45	103·15	*21·80*	*1·45*	*21·83*	*1·00*	*7·62*	–	*9·43*	*5·66*	*13·00*	–
	Bareilly	6·54	5·25	7·60	4·38	6·11	141·67	100·59	155·97	93·00	119·10	*18·22*	*1·21*	*31·38*	*5·88*	*14·31*	*4·21*	*5·47*	–	*13·10*	–
	Roorkee	–	6·94	6·62	7·20	5·11	–	212·86	183·00	177·25	127·23	–	–	*20·31*	–	*8·50*	*1·70*	*19·64*	–	*11·92*	–
	Moradabad	5·40	7·23	11·76	9·58	7·39	87·00	117·28	117·12	207·24	152·67	*22·72*	–	*25·92*	–	*28·32*	*4·36*	*9·34*	–	*7·63*	–
	Meerut	9·63	7·26	9·02	7·75	7·16	252·70	168·32	195·98	180·54	154·25	*23·30*	–	*12·08*	–	*59·17*	*34·32*	*28·95*	*15·70*	*13·34*	–
	Delhi	8·93	10·84	12·19	12·65	8·65	224·93	223·90	256·10	221·19	256·93	*27·14*	–	*29·87*	*·93*	*94·94*	*44·36*	*28·20*	–	*35·65*	–
	Muttra	7·88	8·47	8·80	9·76	6·71	201·23	229·61	238·90	204·18	171·25	*14·81*	–	*89·38*	*67·04*	*23·06*	*11·53*	*8·00*	–	*10·33*	–
AGRA AND CENTRAL INDIA.	Agra	8·61	7·96	12·23	9·11	5·75	251·27	217·85	367·94	249·18	176·32	*25·52*	–	*72·70*	*47·66*	*85·25*	*56·56*	*55·51*	*42·50*	*34·98*	*18·83*
	Morar	6·83	9·12	8·02	6·96	6·00	253·17	277·79	287·43	222·33	179·95	*35·89*	–	*106·33*	*68·02*	*179·02*	*137·43*	*69·66*	*37·21*	*19·30*	–
	Jhansi	–	9.45	10·55	11·31	8·50	–	354·54	308·35	339·92	179·24	–	–	*102·92*	*22·30*	*32·10*	–	*75·42*	*48·11*	*12·13*	–
	Nowgong	–	–	6·66	8·36	6.51	–	–	190·42	238·64	225·11	–	–	–	–	*8·33*	–	*8·00*	–	*27·91*	–
	Saugor	–	10·46	9·08	10·22	7·26	–	217·87	247·10	270·79	218·93	–	–	*18·62*	*4·14*	*9·30*	–	*18·03*	–	*17·75*	–
	Nagode	–	8·15	7·72	7·62	6·39	–	254·66	222·16	374·58	153·74	–	–	*97·77*	*66·66*	*10·00*	–	*4·24*	–	*14·02*	–
	Jubbulpore	–	10·21	8·82	8·15	8·32	–	281·74	273·40	260·68	211·83	–	–	*28·57*	*6·21*	*18·58*	–	*23·61*	–	*20·73*	–
PUNJAB	Umballa	7·20	6·42	8·00	6·34	5·35	166·00	136·41	254·80	214·32	140·70	*14·54*	–	*14·27*	–	*45·60*	*29·12*	*7·36*	*1·13*	*11·29*	*·62*
	Dugshaie	9·54	6·00	4·46	6·56	6·00	175·10	78·14	36·02	96·45	62·55	*21·20*	–	*6·90*	–	*8·53*	–	*16·41*	–	*16·97*	–
	Subathoo	6·38	8·58	7·96	5·68	6·11	71·75	122·82	102·84	107·41	84·77	*11·72*	–	*9·09*	–	*18·62*	–	*9·88*	–	*24·42*	–
	Jullundur	7·04	4·22	3·92	5·49	5·00	174·41	122·79	87·30	168·15	137·36	*10·70*	–	*7·35*	–	*10·84*	–	*12·02*	–	*7·62*	–
	Ferozepore	5·46	4·52	6·32	5·48	4·89	125·70	115·19	169·64	133·30	98·92	*14·02*	–	*9·21*	*·92*	*11·25*	*1·12*	*19·65*	*4·14*	*14·32*	–
	Mooltan	6·08	7·79	8·73	8·15	6·29	230·00	216·74	209·40	329·37	260·55	*22·30*	–	*26·31*	–	*17·71*	–	*19·69*	–	*16·31*	–
	Meean Meer	7·67	6·88	7·30	7·34	6·34	235·61	164·93	236·00	237·36	134·85	*38·65*	–	*21·60*	*·98*	*291·17*	*245·63*	*77·09*	*49·93*	*10·27*	–
	Umritsur	6·50	4·34	6·03	5·83	7·58	91·90	80·63	215·80	198·68	187·04	*34·40*	–	*6·38*	–	*116·42*	*85·24*	*41·35*	*28·19*	*73·35*	–
	Sealkote	6·56	7·20	7·32	5·08	8·59	128·19	152·77	190·00	151·88	167·83	*10·62*	–	*10·81*	–	*8·70*	–	*13·88*	*6·94*	*11·38*	–
	Rawul Pindee	4·90	5·34	5·73	7·86	7·78	135·90	150·79	150·87	254·05	188·92	*7·50*	–	*14·39*	–	*11·90*	–	*15·71*	–	*5·45*	–
	Nowshera	6·71	5·70	5·07	5·26	4·84	147·00	187·80	164·10	161·22	126·10	*14·26*	–	*7·39*	–	*6·21*	–	*9·70*	*2·77*	*9·10*	–
	Peshawur	6·18	5·66	7·06	7·56	8·55	203·56	179·04	290·48	292·60	428·90	*15·15*	–	*12·08*	–	*12·27*	–	*62·94*	*49·24*	*16·86*	–

Note.—The words and figures printed in *italics* were printed in red in the original.

EUROPEAN TROOPS, 1859-63—*continued.*

TABLE of Ratios showing the NUMBER INEFFICIENT PER CENT. OF STRENGTH in each MONTH of the period; and indicating the extent to which the CHIEF DISEASES and CAUSES of MORTALITY in the EUROPEAN ARMY, have prevailed in each MONTH of the YEAR, on the average of the five years 1859–63.

FIVE YEARS 1859–63.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	For the Year.
Daily inefficient from sickness per cent. of Strength	1859	7·70	7·82	8·31	9·20	9·64	10·05	10·00	9·85	9·38	9·31	9·08	7·60	9·03
	1860	7·44	7·33	7·90	8·45	8·30	8·68	8·94	9·35	9·70	8·74	7·58	6·89	8·39
	1861	6·81	6·91	7·29	8·19	8·62	8·40	8·79	9·57	10·01	9·00	7·71	6·79	8·20
	1862	6·64	6·75	6·91	7·48	7·72	7·58	7·90	8·73	8·74	8·77	8·12	6·56	7·68
	1863	6·27	6·21	6·07	6·51	7·39	7·35	7·77	8·37	8·47	7·49	6·30	5·17	6·96
	1859–63	7·01	7·05	7·37	8·07	8·43	8·54	8·79	9·23	9·25	8·71	7·83	6·66	8·12
Admitted into Hospital per cent. of Strength	1859	14·06	13·53	18·11	19·91	21·38	20·71	21·95	19·33	17·57	20·38	19·15	15·01	222·85
	1860	13·32	11·98	15·40	19·12	17·83	18·81	19·03	21·15	20·05	18·14	15·81	14·27	205·15
	1861	13·59	11·56	12·79	19·18	15·41	14·60	21·46	21·25	22·00	22·67	15·74	13·70	204·56
	1862	12·22	11·01	12·01	17·82	14·85	15·31	20·71	20·15	18·26	23·52	17·22	14·00	197·08
	1863	11·80	9·53	10·81	15·31	14·34	14·62	20·66	17·95	19·68	21·13	15·11	12·86	183·84
	1859–63	13·05	11·62	14·15	18·37	17·06	17·09	20·75	19·95	19·45	21·11	16·77	14·12	203·96
Admitted per cent. of Strength on the average of the 5 years	Fevers	1·77	2·04	3·21	6·10	6·24	7·03	8·25	7·42	9·05	10·74	7·70	4·88	75·60
	Dysentery	·41	·38	·47	·63	·60	·53	·70	·96	·95	·73	·54	·47	7·40
	Diarrhœa	·64	·61	·92	1·26	1·07	·94	1·89	2·26	1·40	·96	·76	·72	13·54
	Hepatitis	·45	·43	·46	·55	·55	·57	·64	·61	·60	·61	·44	·44	6·36
	Ophthalmia	·54	·59	·74	·82	·60	·49	·54	·53	·52	·57	·45	·43	6·83
	Rheumatism	·80	·70	·74	·70	·59	·63	·79	·74	·69	·74	·65	·71	8·48
	Respiratory Diseases	·77	·67	·72	·70	·65	·52	·64	·53	·49	·62	·72	·65	7·67
Admitted per cent. of Total Admissions on the average of the 5 years	Fevers	3·55	2·69	4·22	8·34	8·61	9·71	11·32	9·96	11·94	13·88	9·71	6·07	100·00
	Dysentery	5·43	5·06	6·31	8·81	8·49	7·52	9·80	13·23	12·76	9·62	6·95	6·02	100·00
	Diarrhœa	4·60	4·50	6·72	9·62	8·23	7·27	14·51	16·95	10·33	6·94	5·35	4·98	100·00
	Hepatitis	6·91	6·76	7·13	8·96	9·09	9·29	10·47	9·67	9·36	9·41	6·49	6·46	100·00
	Ophthalmia	7·72	8·64	10·81	12·35	9·09	7·51	8·14	7·89	7·56	8·10	6·21	5·96	100·00
	Rheumatism	9·15	8·22	8·69	8·57	7·30	7·76	9·64	8·85	8·10	8·52	7·32	7·88	100·00
	Respiratory Diseases	9·72	8·71	9·28	9·42	8·80	7·22	8·59	7·03	6·35	7·90	8·94	8·04	100·00
	Phthisis Pulmonalis*	6·13	5·31	6·28	9·34	9·12	9·57	12·86	12·11	10·69	8·80	5·23	4·56	100·00
Died per cent. of Total Deaths on the average of the 5 years	Small-pox	20·62	6·19	13·40	20·62	21·65	8·25	4·12	–	–	–	2·06	3·09	100·00
	Cholera	·18	1·14	4·50	8·22	5·90	2·83	15·62	47·13	10·17	3·24	·70	·37	100·00
	Heat Apoplexy	·40	1·38	·40	3·16	12·62	39·25	23·26	8·29	6·51	2·37	1·18	1·18	100·00
	Fevers	3·27	1·83	4·14	9·24	10·97	9·82	10·01	11·65	13·47	14·53	7·22	3·85	100·00
	Dysentery	5·37	3·19	5·04	9·49	8·98	7·39	7·98	13·77	14·95	10·83	7·30	5·71	100·00
	Diarrhœa	5·83	3·07	4·29	10·12	7·67	6·44	8·28	14·11	14·42	11·96	6·14	7·67	100·00
	Hepatitis	6·23	5·88	5·88	8·12	5·06	6·59	8·24	10·00	11·18	13·65	10·12	9·05	100·00
	Respiratory Diseases	14·23	9·62	3·77	7·53	7·95	8·37	5·02	5·02	6·70	12·55	6·28	12·96	100·00
	Phthisis Pulmonalis	7·16	5·31	6·47	8·31	7·16	8·31	10·62	10·62	9·24	9·47	9·24	8·08	100·00
	Delirium Tremens	2·96	1·48	5·18	7·41	11·11	17·78	8·89	8·15	14·81	10·37	5·93	5·93	100·00

* Re-admissions of Invalids not included.

EUROPEAN SOLDIERS, WOMEN, AND CHILDREN—NATIVE ARMY—GAOL POPULATION.

COMPARATIVE STATEMENT of the ADMISSION-RATES and DEATH-RATES for EUROPEAN SOLDIERS, and WOMEN and CHILDREN of European Regiments, for NATIVE TROOPS, and for PRISONERS, arranged according to the system of Statistical Classification now in use, for European Soldiers, Women, and Children, the ratios taken on the Average of the years 1860-63; for Natives, on the Average of the Three Years 1861-63.

	ADMITTED INTO HOSPITAL PER CENT. OF THE AVERAGE STRENGTH.															*DIED IN HOSPITAL PER 1,000 OF AVERAGE STRENGTH.*				
	Europeans.			Natives.			Europeans.			Natives.			Europeans.			Natives.		*Europeans.*			*Natives.*	
CLASSES OF DISEASE.	Fighting Men.	Women.	Children.	Fighting Men.	Prisoners.	ORDERS OF DISEASE.	Fighting Men.	Women.	Children.	Fighting Men.	Prisoners.	DISEASES AND GROUPS OF DISEASES.	Fighting Men.	Women.	Children.	Fighting Men.	Prisoners.	*Fighting Men.*	*Women.*	*Children.*	*Fighting Men.*	*Prisoners.*
Class I. Zymotic	142·06	76·85	69·17	99·30	97·63	Order 1. Miasmatic	109·11	76·31	68·37	92·08	91·43	Small-pox	·24	·26	·41	·18	·13	*·40*	*·76*	*·67*	*·31*	*·07*
												Intermittent fevers	47·90	27·48	15·75	69·10	46·55	*·92*	*·65*	*2·76*	*2·63*	*5·87*
												Remittent and continued fevers	24·30	19·48	12·98	1·73	9·31	*2·98*	*4·64*	*7·91*	*1·49*	*13·43*
												Dysentery	5·60	5·80	2·66	7·14	26·21	*4·30*	*9·59*	*21·72*	*2·86*	*34·25*
												Diarrhœa	12·30	10·87	14·24	5·02						
												Cholera	1·95	2·64	2·22	·59	2·90	*11·50*	*17·35*	*16·34*	*2·74*	*11·63*
												Rheumatism	7·42	1·25	·07	4·85	2·76	*·08*	–	–	*·11*	*·33*
												Ophthalmia	6·12	7·18	16·48	2·25	2·06	–	–	–	–	*·39*
												All other diseases of the order	3·28	1·35	3·56	1·22	1·51	*·12*	*·21*	*4·78*	*·16*	*·49*
						Order 2. Enthetic	31·23	·12	·05	5·76	2·40	Venereal diseases	31·23	·12	·05	5·76	2·40	*·21*	–	*·08*	*·11*	**·36*
						Order 3. Dietic	1·02	·15	·07	·14	·67	Drunkenness	·88	·12	–	·02	–	*·04*	–	–	*·02*	–
												Scurvy	·14	·03	·07	·12	·67	*·01*	*·11*	*·22*	*·01*	*·40*
						Order 4. Parasitic	·70	·27	·68	1·32	3·13	Worms	·57	·27	·48	·14	·40	–	–	–	–	*·04*
												Itch, aphthae, &c.	·13	–	·20	1·18	2·73	–	–	*·37*	–	
Class II. Constitutional	1·25	1·73	1·08	·33	1·23	Order 2. Tubercular	1·04	·99	·59	·17	·48	Phthisis pulmonalis	·63	·82	·07	·09	·30	*1·70*	*3·77*	*·30*	*·46*	*1·99*
												Other scrofulous diseases	·41	·17	·52	·08	·18	*·02*	–	*2·54*	*·04*	*·07*
						Order 1. Diathetic	·21	·74	·49	·16	·75	Other constitutional diseases	·21	·74	·49	·16	·75	*11*	*·43*	*·07*	*·13*	*1·57*
Class III. Local	37·32	20·82	9·04	22·72	29·97	Order 1. Nervous	3·55	2·22	2·40	1·38	1·98	Brain affections	·93	·47	2·02	·11	·35	*174*	*1·94*	*14·40*	*·39*	*1·09*
												Mental affections	·25	·15	–	·07	·51	*·04*	*·11*	–	*·03*	*·22*
												Delirium tremens	·47	–	–	–	–	*·48*	–	–	–	–
												Other nervous affections	1·90	1·60	·38	1·20	1·12	*·09*	*·21*	*·30*	*·08*	–
						Order 2. Circulatory	·99	·33	·07	·06	·09	Affections of the heart	·83	·30	·07	·03	·04	*·33*	*·21*	*·08*	*·09*	*·28*
												Diseases of the blood-vessels	·16	·03	–	·03	·05	*·13*	–	–	–	–
						Order 3. Respiratory	5·24	2·99	2·95	2·70	3·29	Diseases of the respiratory organs	5·24	2·99	2·95	2·70	3·29	*·91*	*1·83*	*3·48*	*1·53*	*3·84*
						Order 4. Digestive	13·94	11·00	1·35	4·70	7·10	Diseases of the digestive system	6·93	7·61	·75	3·56	6·37	*·51*	*1·19*	*·52*	*·46*	*1·26*
												Diseases of the liver	6·17	2·93	·26	·18	·11	*2·82*	*1·94*	*·30*	*·15*	*·20*
												Affection of the spleen	·84	·46	·34	·96	·62	*·06*	*·21*	*·15*	*·30*	*·35*
						Order 5. Urinary	·54	·25	·14	·16	·20	Diseases of the urinary system	·54	·25	·14	·16	·20	*·15*	*·11*	–	*·09*	*·40*
						Order 6. Generative	1·60	·86	–	·24	·19	Diseases of the generative system	1·60	·86		·24	·19	–	*·32*	–	–	*·01*
						Order 7. Locomotive	·80	·10	·05	·29	·37	Diseases of the bones and joints	·80	·10	·05	·29	·37	*·05*	–	*·07*	*·02*	*·03*
						Order 8. Integumentary	10·66	3·07	2·08	13·19	16·75	Skin diseases	·93	·18	·31	1·26	4·52	–	–	–	*·01*	–
												Abscess and ulcer	9·73	2·89	1·77	11·93	12·23	*·06*	–	*·30*	*·11*	*·98*
Class IV. Developmental	·96	25·64	5·40	1·64	1·24	Orders 1 and 2.—	–	21·65	3·22	–	–	Childbirth, and diseases of development	–	21·65	3·22	–	–	–	*3·02*	*5·97*	–	–
Class V. Violence	8·48	1·93	1·11	9·74	4·17	Orders 3 and 4.—	·96	3·99	2·18	1·64	1·24	Debility, atrophy, and old age	·96	3·99	2·18	1·64	1·24	*·21*	*·97*	*6·49*	*·35*	*2·72*
							8·38	1·93	1·11	9·61	4·17	Accident	8·38	1·93	1·11	9·61	4·17	*·30*	–	*·60*	*·50*	*·61*
							·10	–	–	·13		Punished	·10	–	–	·13		–	–	–	–	–
Disease not specified	·49	·70	·13	·19	·02		·49	·70	·13	·19	·02	Disease not specified	·49	·70	·13	·19	·02	*·06*	–	–	–	–
	190·56	127·67	85·93	133·92	134·26		190·56	127·67	85·93	133·92	134·26		190·56	127·67	85·93	133·92	134·26	*30·33*	*49·57*	*90·37*	*15·18*	*82·88*

* The Enthetic Group includes Leprosy, the cause of upwards of one-half of the mortality of the Order among the Gaol Population.

Note.—The words and figures printed in *italics* were printed in red in the original.

EUROPEAN WOMEN, 1860-63.

TABLE showing the Causes of Sickness and Mortality among Women belonging to European Regiments serving in the Bengal Presidency during the Years from 1860 to 1863, and the Ratios of Admissions and Deaths to the Strength on the Average of the Four Years.

DISEASES.	1860.		1861.		1862.		1863.		Average of Years 1860–63.	
	Strength - - 2,080 Treated per Cent. of Strength - 119·28 *Died per 1,000 of Strength:* *Cholera - 18·27* *All Causes - 56·25*		Strength - - 2,293 Treated per Cent. of Strength - 141·30 *Died per 1,000 of Strength:* *Cholera - 27·91* *All Causes - 68·03*		Strength - - 2,397 Treated per Cent. of Strength - 133·50 *Died per 1,000 of Strength:* *Cholera - 16·69* *All Causes - 41·30*		Strength - - 2,510 Treated per Cent. of Strength - 116·61 *Died per 1,000 of Strength:* *Cholera - 7·57* *All Causes - 35·06*		Treated per Cent. of Strength.	*Died per 1,000 of Strength.*
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*		
Variola	6	-	13	*7*	2	-	3	-	·26	*·76*
Varicella	1	-	-	-	-	-	1	—	-	-
Morbilli	1	-	2	-	1	—	—	—	-	-
Scarlatina	1	—	—	—	—	—	—	—	-	-
Diphtheria	1	*1*	—	—	—	—	—	—	-	-
Tonsillitis	15	-	10	-	9	-	21	—	-	-
Febris Intermittens	413	*3*	652	-	751	*1*	734	*2*	46·96	*5·29*
„ Remittens	155	*9*	126	*11*	107	-	43	*1*		
„ Continua	395	*4*	464	*7*	359	*6*	159	*5*		
Ophthalmia	136	-	183	-	174	-	173	-	7·18	-
Erysipelas	4	-	5	*1*	2	-	3	—	-	-
Anthrax	-	-	-	-	-	-	1	—	-	-
Furunculus	2	-	6	-	4	-	6	—	-	-
Influenza	2	-	7	-	14	-	7	—	-	-
Dysenteria	131	*15*	152	*16*	122	*12*	133	*11*	5·80	*9·59*
Diarrhœa	205	*5*	277	*7*	261	*9*	266	*14*	10·87	
Cholera	60	*38*	105	*64*	58	*40*	22	*19*	2·64	*17·35*
Rheumatismus	22	-	39	-	26	-	29	-	1·25	-
Syphilis Primaria	-	-	-	-	1	-	1	—	-	-
„ Secundaria	-	-	1	-	3	-	4	—	-	-
Gonorrhœa	1	—	—	—	—	—	—	—	-	-
Scorbutus	2	*1*	-	-	1	—	—	—	-	-
Ebriositas	1	-	3	-	2	-	5	—	-	-
Bronchocele	-	-	1	—	—	—	—	—	-	-
Scabies	-	-	3	-	2	-	1	—	-	-
Vermes	1	-	-	-	1	-	2	—	-	-
„ Tænia	1	-	4	-	4	-	5	—	-	-
„ Dracunculus	-	-	-	-	1	—	—	—	-	-
Anœmia	6	-	23	*1*	12	-	17	—	-	-
Anasarca	5	-	1	-	2	*1*	1	*1*	-	-
Carcinoma	-	-	-	-	-	-	1	*1*	-	-
Scrofula	2	-	3	-	1	—	—	—	-	-
Phthisis Pulmonalis	14	*8*	33	*12*	9	*4*	20	*10*	·82	*3·77*
Hæmoptysis	5	-	2	-	2	-	1	*1*	-	-
Apoplexia	9	*6*	7	*6*	4	*2*	3	*1*	·55	*1·62*
Epilepsia	1	-	5	-	4	-	4	*1*	-	-
Paralysis	1	*1*	3	-	2	*1*	1	—	-	-
Mania	1	-	3	*1*	2	-	2	-	·12	*·11*
Dementia	-	-	-	-	6	-	-	-		
Delirium Tremens	-	-	-	-	1	-	3	—	-	-
Hysteria	23	-	24	-	12	-	19	—	-	-
Tetanus	-	-	1	*1*	1	*1*	—	—	-	-
Cephalœa	5	-	4	-	3	-	4	—	-	-
Neuralgia	-	-	4	-	6	-	11	—	-	-
Otitis	7	-	5	-	7	-	7	—	-	-
Odontalgia	1	-	-	-	-	-	-	-		
Pericarditis	-	-	1	-	1	-	1	-	·16	*·21*
Endocarditis	1	-	1	-	3	*2*	2	-		
Aneurisma	-	-	1	-	2	-	-	-		
Angina Pectoris	-	-	-	-	2	-	-	-		
Syncope	1	—	—	—	—	—	—	—	-	-
Palpitatio	3	-	3	-	4	-	2	—	-	-
Varix	-	-	1	-	2	—	—	—	-	-
Laryngitis	2	*1*	1	-	1	-	-	-		
Bronchitis	47	*3*	52	*1*	51	*1*	59	*2*	2·99	*1·83*
Pleuritis	3	-	5	-	5	-	7	-		
Pneumonia	6	*5*	8	*2*	7	*1*	5	-		
Asthma	5	-	4	-	3	*1*	4	-		
Dyspnœa	2	-	-	-	-	-	-	-		
Gastritis	6	-	4	*2*	8	*1*	3	*1*	-	-
Enteritis	1	*1*	1	-	2	*1*	—	—	-	-
Peritonitis	3	-	2	-	1	-	3	*1*	-	-
Obstipatio	19	*1*	18	-	6	-	11	—	-	-
Dyspepsia	55	-	79	-	73	-	129	—	-	-
Colica	54	-	55	-	46	-	32	—	-	-
Hæmatemesis	2	-	-	-	-	-	1	—	-	-
Hæmorrhois	5	-	16	-	20	-	12	—	-	-
Fistula in Ano	-	-	2	—	—	—	—	—	-	-

Note.—The words and figures printed in *italics* were printed in red in the original.

EUROPEAN WOMEN, 1860–63—*continued.*

DISEASES.	1860.		1861.		1862.		1863.		Average of Years 1860–63.	
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Treated per Cent. of Strength.	*Died per 1,000 of Strength.*
Splenitis	7	-	12	*1*	12	*1*	12	-	·46	*·21*
Hepatitis	66	*5*	81	*5*	71	*4*	54	*3*	2·93	*1·91*
Icterus	4	-	6	*1*	9	-	10	—	-	-
Ascites	3	*2*	-	-	1	-	4	—	-	-
Nephritis	3	*1*	3	-	3	-	3	—	-	-
Ischuria	1	-	4	-	-	-	1	—	-	-
Hæmaturia	-	-	-	-	-	-	1	—		-
Cystitis	2	-	1	-	-	-	1	—	-	-
Leucorrhœa	7	-	5	-	11	-	9	-		
Ovaritis	1	-	4	-	-	-	-	-		
Hysteritis	1	*1*	4	*1*	3	-	3	-		
Phlegmasia Dolens	-	-	-	-	-	-	1	-	·86	*·32*
Fistula Vaginalis	1	-	-	-	-	-	-	-		
Prolapsus Uteri	-	-	-	-	3	-	4	-		
Tumor	7	-	8	*1*	5	-	3	-		
Lumbago	3	-	1	—	—	—	—	—	-	-
Pleurodynia	-	-	2	—	—	—	—	—	-	-
Arthritis	2	—	—	—	—	—	—	—	-	-
Synovitis	-	-	-	-	1	—	—	—	-	-
Morbi Cutis	4	-	4	-	8	-	1	—	-	-
Phlegmon	31	-	30	-	21	-	7	-		
Paronychia	1	-	3	-	4	-	7	-	2·89	-
Abscessus	7	-	12	-	31	-	20	-		
Ulcus	20	-	28	-	24	-	22	-		
Partus	239	*4*	426	*7*	504	*4*	503	*7*	18·02	*2·37*
Abortus	25	*1*	44	-	45	-	51	*2*	1·78	*·32*
Paramenia	19	-	48	-	48	*1*	57	*2*	1·85	*·32*
Asthenia	88	*1*	42	*1*	126	*4*	114	*3*	3·99	*·97*
Injury	39	-	43	-	45	-	52	-	1·93	-
Not specified	49	-	4	-	9	-	3	-	-	-
Ratio for all Diseases not specially calculated	-	-	-	-	-	-	-	-	13·36	*2·59*
	2,481	*117*	3,240	*156*	3,200	*99*	2,927	*88*	127·67	*49·57*

EUROPEAN CHILDREN, 1860–63.

TABLE showing the Causes of Sickness and Mortality among Children belonging to European Regiments serving in the Bengal Presidency during the Years from 1860 to 1863, and the Ratios of Admissions and Deaths to the Strength on the average of the Four Years.

DISEASES.	1860.		1861.		1862.		1863.		Average of Years 1860–63.	
	Strength - - 3,186 Treated per Cent of Strength - 79·47 *Died per 1,000 of Strength:* *Cholera - 20·72* *All Causes - 102·64*		Strength - - 3,079 Treated per Cent. of Strength - 90·22 *Died per 1,000 of Strength:* *Cholera - 30·53* *All Causes - 91·91*		Strength - - 3,406 Treated per Cent. of Strength - 93·83 *Died per 1,000 of Strength:* *Cholera - 13·21* *All Causes - 91·02*		Strength - - 3,730 Treated per Cent. of Strength - 80·69 *Died per 1,000 of Strength:* *Cholera - 3·75* *All Causes - 78·02*		Treated per Cent. of Strength.	*Died per 1,000 of Strength.*
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*		
Variola	24	*4*	25	*4*	-	-	6	*1*		
Varicella	2	-	6	*1*	1	-	-	-		
Morbilli	130	*19*	25	*1*	52	*2*	9	*1*	2·10	*2·54*
Scarlatina	2	*1*	-	-	-	-	-	-		
Tonsillitis	11	*1*	13	*1*	13	-	21	*1*		
Diphtheria	-	-	-	-	1	-	11	*8*		
Parotitis	-	-	1	-	1	-	1	-	1·54	*2·54*
Cynanche Trachealis	6	*6*	3	*1*	20	*7*	11	*3*		
Pertussis	8	*1*	2	-	58	*4*	25	*1*		
Febris Intermittens	365	*10*	541	*7*	562	*10*	643	*10*		
„ Remittens	120	*9*	93	*7*	113	*10*	66	*10*	28·73	*10·67*
„ Continua	281	*16*	390	*24*	447	*16*	230	*14*		
Ophthalmia	454	-	629	-	587	-	538	-	16·48	-

Note.—The words and figures in *italics* were printed in red in the original.

EUROPEAN CHILDREN, 1860-63—*continued.*

DISEASES.	1860.		1861.		1862.		1863.		Average of Years 1860-63.	
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Treated per Cent. of Strength.	*Died per 1,000 of Strength.*
Erysipelas	1	*1*	2	*2*	2	—	—	—	–	–
Furunculus	–	–	4	–	6	–	3	—	–	–
Influenza	–	–	2	–	6	–	18	*2*	–	–
Dysenteria	90	*20*	79	*16*	100	*15*	87	*19*	16·90	*21·72*
Diarrhœa	481	*58*	375	*39*	498	*66*	554	*58*		
Cholera	109	*66*	114	*94*	60	*45*	15	*14*	2·22	*16·34*
Rheumatismus	3	–	2	–	2	–	3	–	·07	–
Syphilis Secundaria	1	*1*	1	–	–	–	1	—	–	–
Gonorrhœa	–	–	3	–	–	–	1	—	–	–
Scorbutus	8	*3*	–	–	1	–	1	—	–	–
Aphthæ	3	–	–	–	7	*3*	4	*2*	–	–
Porrigo	–	–	–	–	2	–	1	—	–	–
Scabies	–	–	1	–	5	–	4	—	–	–
Vermes	14	–	10	–	8	–	4	—	–	–
„ Tœnia	–	–	7	–	10	–	9	—	–	–
„ Dranunculus	–	–	–	–	2	—	—	—	–	–
Anœmia	–	–	–	–	–	–	61	—	–	–
Anasarca	2	*1*	–	–	1	–	2	—	–	–
Scrofula	7	*4*	1	–	5	*1*	12	*1*		
Tabes Mesenterica	4	*3*	8	*4*	14	*11*	15	*10*	·59	*2·84*
Phthisis Pulmonalis	1	–	3	*3*	5	*1*	1	–		
Morbus Coxæ	2	–	1	–	–	–	–	–		
Meningitis	–	–	1	–	–	*6*	1	–		
Myelitis	1	–	–	–	–	–	–	–		
Encephalitis	–	–	–	–	–	–	3	*3*		
Hydrocephalus	18	*13*	3	*2*	–	*5*	6	*5*	2·02	*14·40*
Apoplexia	1	–	1	*1*	–	–	1	*1*		
Epilepsia	4	–	3	*1*	–	–	4	–		
Convulsio	55	*46*	35	*25*	61	*43*	56	*42*		
Paralysis	–	–	1	–	–	–	1	–		
Chorea	–	–	–	–	2	–	1	–		
Hysteria	1	–	2	–	–	–	1	–		
Tetanus	–	–	–	–	–	–	3	*3*	·38	*·30*
Trismus	–	–	–	–	–	–	1	*1*		
Cephalœa	–	–	2	–	3	–	–	–		
Otitis	5	–	6	–	8	–	10	–		
Dysecœa	–	–	–	–	1	–	2	–		
Palpitatio	–	–	1	–	–	–	1	—	–	–
Endocarditis	–	–	2	–	2	–	3	*1*	–	–
Epistaxis	–	–	–	–	3	–	–	–		
Laryngitis	2	–	2	*1*	7	*2*	–	–		
Bronchitis	61	*3*	83	*7*	108	*16*	98	*7*	2·95	*3·43*
Pleuritis	–	–	2	–	–	–	1	*1*		
Pneumonia	4	*2*	8	*1*	5	*3*	8	*2*		
Asthma	–	–	3	*1*	–	–	–	–		
Glossitis	–	–	1	*1*	—	—	—	—	–	–
Pharyngitis	4	*1*	–	–	1	—	—	—	–	–
Gastritis	–	–	–	–	1	–	1	—	–	–
Enteritis	3	–	–	–	–	–	3	*3*	–	–
Peritonitis	–	–	–	–	1	*1*	1	—	–	–
Obstipatio	3	–	2	–	2	–	2	—	–	–
Hernia	2	–	1	–	–	–	1	—	–	–
Dyspepsia	3	–	4	–	3	–	12	—	–	–
Colica	4	–	13	*1*	10	–	7	—	–	–
Hœmorrhois	1	–	–	–	3	–	1	—	–	–
Splenitis	2	*1*	5	–	16	*1*	22	–	·34	*·15*
Hepatitis	11	*2*	7	–	5	–	12	*2*	·26	*·30*
Icterus	4	–	–	–	1	–	1	—	–	–
Ascites	–	–	–	–	–	–	4	—	–	–
Phymosis	–	–	1	–	–	–	1	—	–	–
Ischuria	1	–	–	–	4	–	2	—	–	–
Leucorrhœa	1	–	–	–	3	–	6	—	–	–
Synovitis	–	–	–	–	1	–	1	—	–	–
Contractura	–	–	–	–	–	–	2	—	–	–
Caries	–	–	1	*1*	1	—	–	—	–	–
Necrosis	–	–	–	–	–	–	1	—	–	–
Morbi Cutis	5	–	11	–	7	–	18	—	–	–
Phlegmon	50	–	26	–	34	–	35	–		
Paronychia	–	–	–	–	2	–	2	–		
Tumor	–	–	5	*2*	5	–	9	*1*	2·08	*·30*
Abscessus	–	–	1	–	–	–	–	–		
Ulcus	14	–	20	–	17	–	17	*1*		
Dentition	39	*11*	86	*16*	138	*25*	163	*28*	3·22	*5·97*
Amenorrhœa	–	–	3	–	1	–	–	–	–	–
Harelip	–	–	–	–	–	–	2	—	–	–
Atrophy and Debility	56	*22*	61	*18*	95	*16*	80	*31*	2·18	*6·49*
Injury	32	*2*	33	*1*	39	*1*	45	*4*	1·11	*·60*
Not specified	16	–	1	–	–	–	1	—	–	–
Ratio for all Diseases not specially calculated	–	–	–	–	–	–	–	–	2·76	*1·78*
	2,532	*327*	2,778	*283*	3,196	*310*	3,010	*291*	85·93	*90·37*

Note.—The words and figures in *italics* were printed in red in the original.

NATIVE TROOPS, 1861.

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the Native Troops serving in the various Provinces of the Bengal Presidency, during the Year 1861.

(Police Corps, and the Punjab and Central India Civil and Irregular Corps, are not included in this Statement.)

DISEASES.	LOWER BENGAL AND ASSAM. Average Strength - - 5,954; Daily Sick per Cent. of Strength - - - 4·55; Admitted per Cent. of Strength - - 121·21; *Died per 1,000 of Strength: A. From Cholera 6·38; B. From all Causes 37·79*			BENARES, OUDE, AND N.W. PROVINCES. Average Strength - 13,634; Daily Sick per Cent. of Strength - - - 3·91; Admitted per Cent. of Strength - - 105·65; *Died per 1,000 of Strength: A. From Cholera - 3·38; B. From all Causes 13·06*			CENTRAL INDIA. Average Strength - - 7,804; Daily Sick per Cent. of Strength - - - 3·93; Admitted per Cent. of Strength - - 141·22; *Died per 1,000 of Strength: A. From Cholera ·25; B. From all Causes 5·22*			PUNJAB. Average Strength - 10·171; Daily Sick per Cent. of Strength - - - 4·08; Admitted per Cent. of Strength - - 118·47; *Died per 1,000 of Strength: A. From Cholera 6·88; B. From all Causes 18·47*			HILL STATIONS. Average Strength - - 2,234; Daily Sick per Cent. of Strength - - - 3·15; Admitted per Cent. of Strength - - 80·73; *Died per 1,000 of Strength: A. From Cholera - 3·12; B. From all Causes 12·12*			BENGAL PRESIDENCY. Average Strength - - 39,797; Daily Sick per Cent. of Strength - - - 4·01; Admitted per Cent. of Strength - - 116·90; *Died per 1,000 of Strength: A. From Cholera 4·09; B. From all Causes *16·79*		
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	*Died per 1,000 of Average Strength.*
Cholera	1·66	38·38	*6·38*	·91	37·10	*3·38*	·11	22·22	*·25*	1·34	51·47	*6·88*	·94	33·33	*3·12*	·98	41·90	*4·09*
Small-pox	·55	9·10	*·50*	·07	22·22	*·14*	·14	27·27	*·38*	·25	34·62	*·88*	2·19	10·20	*2·24*	·32	17·20	*·56*
Fevers	62·58	1·69	*10·58*	45·09	·70	*3·15*	89·50	·23	*2·05*	61·80	·46	*2·85*	25·42	1·06	*2·68*	59·56	·67	*3·97*
Dysentery	7·71	5·23	*4·03*	7·09	2·07	*1·47*	4·96	2·07	*1·02*	5·66	2·60	*1·47*	2·55	3·51	*·89*	6·15	2·82	*1·73*
Diarrhœa	7·84	7·07	*5·55*	4·84	1·66	*·81*	1·91	–	–	4·12	2·62	*1·08*	5·50	1·64	*·90*	4·57	3·14	*1·43*
Hepatitis	·09	–	–	·22	–	–	·17	–	–	·09	–	–	·22	–	–	·16	12·90	*·23*
Ophthalmia	·87	–	–	1·84	–	–	2·03	–	–	2·21	–	–	4·75	–	–	1·99	–	–
Rheumatism	4·49	–	–	5·47	–	–	3·78	–	–	4·41	–	–	5·33	–	–	4·62	–	–
Venereal Diseases	4·65	–	–	6·27	–	–	9·02	–	–	5·16	–	–	7·52	–	–	6·36	–	–
Phthisis Pulmonalis	·25	60·00	*1·51*	·07	44·44	*·30*	·04	66·66	*·25*	·09	66·66	*·59*	·22	20·00	*·50*	·10	51·22	*·55*
Apoplexy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·04	50·00	*·20*
Delirium Tremens	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Epilepsy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·04	–	–
Respiratory Disease	3·95	8·09	*3·19*	2·32	6·01	*1·39*	2·42	·53	*·12*	2·47	7·17	*1·77*	2·73	5·00	*1·34*	2·65	5·70	*1·51*
Abscess and Ulcer	7·44	–	–	14·25	–	–	8·74	–	–	10·54	–	–	9·62	–	–	10·95	–	–
Wounds and Accidents	3·86	–	–	6·86	–	–	7·28	–	–	10·26	–	–	6·04	–	–	7·39	–	*·13*
All other Causes	15·27	–	*6·05*	10·35	–	*2·42*	11·12	–	*1·15*	10·07	–	*2·95*	7·70	–	*·45*	11·02	–	*2·39*
	121·21	–	*37·79*	105·65	–	*13·06*	141·22	–	*5·22*	118·47	–	*18·47*	80·73	–	*12·12*	116·90	–	*16·79*

* Died out of hospital, in other hospitals, or on leave at their homes, 140 men, or 3·52 per 1,000 of strength, making the total mortality of the year 20·31 per 1,000.

Note.—The words and figures in *italics* were printed in red in the original.

NATIVE TROOPS, 1862.

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the Native Troops serving in the various Provinces of the *Bengal* Presidency during the Year 1862.

(Police corps, and the Punjab and Central India civil and irregular corps, are not included in this Statement.)

DISEASES.	LOWER BENGAL AND ASSAM. Average Strength - 6,431; Daily Sick per cent. of Strength - 5·09; Admitted per cent. of Strength - 132·50; *Died per 1,000 of Strength— A. From Cholera - 5·44; B. From all Causes - 27·83*			BENARES, OUDE, AND N. W. PROVINCES. Average Strength - 12,292; Daily Sick per cent. of Strength - 4·13; Admitted per cent. of Strength - 119·34; *Died per 1,000 of Strength— A. From Cholera - ·57; B. From all Causes - 7·56*			CENTRAL INDIA. Average Strength - 5,415; Daily Sick per cent. of Strength - 4·53; Admitted per cent. of Strength - 155·92; *Died per 1,000 of Strength— A. From Cholera - 1·30; B. From all Causes - 8·68*			PUNJAB. Average Strength - 9,026; Daily Sick per cent. of Strength - 4 92; Admitted per cent. of Strength - 176·69; *Died per 1,000 of Strength— A. From Cholera - 3·99; B. From all Causes - 16·84*			HILL STATIONS. Average Strength - 2,758; Daily Sick per cent. of Strength - 3·16; Admitted per cent. of Strength - 78·17; *Died per 1,000 of Strength— A. From Cholera - 1·81; B. From all Causes - 11·24*			BENGAL PRESIDENCY. Average Strength - 35,922; Daily Sick per cent. of Strength - 4·48; Admitted per cent. of Strength - 138·45; *Died per 1,000 of Strength— A. From Cholera - 2·51; B. From all Causes - 13·97**		
	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*
Cholera	1·09	50·00	*5·44*	·21	27·00	*·57*	·39	33·33	*1·30*	·61	65·45	*3·99*	·25	71·43	*1·81*	·50	50·28	*2·51*
Small-pox	·15	30·00	*·46*	·02	–	– –	·04	–	– –	·01	–	– –	·33	–	– –	·07	12·50	*·08*
Fevers	68·90	1·20	*8·24*	53·69	·36	*1·95*	99·72	·26	*2·59*	114·39	·48	*5·43*	26·50	1·09	*2·90*	76·52	·54	*4·12*
Dysentery	13·09	4·16	*5·44*	5·54	2·20	*1·22*	4·97	1·49	*·74*	6·39	1·56	*1·00*	2·54	1·43	*·36*	6·79	2·62	*1·78*
Diarrhœa	5·96	2·88	*1·71*	3·58	·45	*·16*	2·95	1·25	*·37*	6·15	1·44	*·89*	2·86	1·27	*·36*	4·50	1·48	*·67*
Hepatitis	·08	–	*·31*	·17	–	*·08*	·26	–	*·18*	·13	–	*·22*	·65	–	*·36*	·19	10·00	*·19*
Ophthalmia	1·07	–	– –	2·28	–	– –	2·18	–	– –	2·95	–	– –	3·92	–	– –	2·34	—	—
Rheumatism	5·43	–	– –	6·03	–	– –	4·26	–	– –	4·38	–	– –	4·97	–	– –	5·16	—	—
Venereal Diseases	4·50	–	– –	6·21	–	– –	9·22	–	– –	4·58	–	– –	6·50	–	– –	5·97	—	—
Phthisis Pulmonalis	– –	–	– –	– –	–	– –	– –	–	– –	– –	–	– –	– –	–	– –	·08	60 00	*·50*
Apoplexy	– –	–	– –	– –	–	– –	– –	–	– –	– –	–	– –	– –	–	– –	·06	63·16	*·33*
Delirium Tremens	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Epilepsy	– –	–	– –	– –	–	– –	– –	–	– –	– –	–	– –	– –	–	– –	·06	—	—
Respiratory Diseases	2·92	4·26	*1·25*	2·67	3·96	*1·06*	1·46	10·13	*1·48*	2·45	12·22	*2·99*	2·76	3·94	*1·09*	2·48	6·61	*1·64*
Abscess and Ulcer	10·98	–	– –	17·85	–	– –	13·52	–	– –	10·91	–	– –	7·90	–	– –	13·46	—	—
Wounds and Accidents	7·15	–	*·78*	9·59	–	*·16*	9·09	–	*·18*	12·54	–	*·33*	10·80	–	– –	9·90	–	*·31*
All other Diseases	11·18	–	*4·20*	11·50	–	*2·36*	7·86	–	*1·84*	11·20	–	*1·99*	8·19	–	*4·36*	10·37	–	*1·84*
	132·50	–	*27·83*	119·34	–	*7·56*	155·92	–	*8·68*	176·69	–	*16·84*	78·17	–	*11·24*	138·45	–	*13·97*

* Died out of Hospital, in other Hospitals, or on Leave at their Homes, 113 men, or 3·15 per 1,000 of Strength, making the Total Mortality of the Year 17·12 per 1,000.

Note.—The words and figures printed in *italics* were printed in red in the original.

NATIVE TROOPS, 1863.

COMPARATIVE STATEMENT of the Ratios of SICKNESS and MORTALITY among the NATIVE TROOPS serving in the various Provinces of the *Bengal* Presidency during the Year 1863.

(Police corps, and the Punjab and Central India civil and irregular corps, are not included in this Statement.)

DISEASES.	LOWER BENGAL AND ASSAM. Average Strength - 6,583; Daily Sick per cent. of Strength - - 4·86; Admitted per cent. of Strength - - 145·05; *Died per 1,000 of Strength— A. From Cholera - 4·25 B. From all Causes - 23·24*			BENARES, OUDE, AND N.W. PROVINCES. Average Strength - 12,899; Daily Sick per cent. of Strength - - 3·90; Admitted per cent. of Strength - - 112·15; *Died per 1,000 of Strength— A. From Cholera - 2·09 B. From all Causes - 11·55*			CENTRAL INDIA. Average Strength - 5,028; Daily Sick per cent. of Strength - - 4 93; Admitted per cent. of Strength - - 125·89; *Died per 1,000 of Strength— A. From Cholera - ·40 B. From all Causes - 9·35*			PUNJAB. Average Strength - 10·307; Daily Sick per cent. of Strength - - 5·67; Admitted per cent. of Strength - - 216·66; *Died per 1,000 of Strength— A. From Cholera - — B. From all Causes - 17·17*			HILL STATIONS. Average Strength - 2,642; Daily Sick per cent. of Strength - - - 2·92; Admitted per cent. of Strength - - - 99·58; *Died per 1,000 of Strength— A. From Cholera - — B. From all Causes - 8·33*			BENGAL PRESIDENCY. Average Strength - 37,459; Daily Sick per cent. of Strength - - 4·62; Admitted per cent. of Strength - - 147·65; *Died per 1,000 of Strength— A. From Cholera - 1·44 B. From all Causes - 14·63**		
	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*
Cholera	·68	62·22	*4·25*	·38	55·10	*2·09*	·06	66·67	*·40*	·02	–	–	·04	–	–	·26	57·00	*1·52*
Small-pox	·45	33·33	*1·52*	·04	–	–	·02	–	–	·03	–	–	·42	–	–	·14	19·61	*·27*
Fevers	76·52	·87	*6·69*	53·71	·55	*2·95*	65·39	·61	*3·98*	124·64	·40	*5·05*	32·89	·58	*1·89*	77·34	·55	*4·25*
Dysentery	11·29	3·63	*4·10*	7·22	1·93	*1·40*	3·48	2·29	*·80*	12·20	1·98	*2·43*	3·22	–	–	8·52	2·32	*1·97*
Diarrhœa	8·11	1·68	*1·37*	3·45	2·02	*·70*	2·37	3·36	*·80*	10·07	1·25	*1·26*	4·09	·92	*·38*	5·99	1·60	*·96*
Hepatitis	·15	–	–	·14	–	–	·20	4·86	–	·19	–	–	–	–	–	·19	2·78	*·05*
Ophthalmia	1·31	–	–	2·25	–	–	1·99	–	–	2·85	–	–	5·26	–	–	2·43	—	—
Rheumatism	4·12	–	–	4·06	–	–	5·67	–	–	5·66	–	–	5·08	–	–	4·80	—	—
Venereal Diseases	4·01	–	–	4·79	–	–	7·08	–	–	4·54	–	–	5·68	–	–	4·95	—	—
Phthisis Pulmonalis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·10	25·00	*·27*
Apoplexy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·05	60·00	*·32*
Delirium Tremens	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Epilepsy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·06	—	—
Respiratory Diseases	3·31	2·29	*·76*	2·06	5·26	*1·08*	2·87	–	*1 38*	3·76	6·54	*2·43*	3·26	3·49	*1·14*	2·92	4·93	*1·44*
Abcess and Ulcer	9·61	–	–	13·40	–	–	14·96	–	–	12·88	–	–	8·78	–	–	12·47	—	—
Wounds and Accidents	8·08	–	–	9·33	–	–	10·44	–	–	17·38	–	*2·81*	18·25	–	–	12·09	–	*1·09*
All other Diseases	17·41	–	*4·55*	11·32	–	*3·33*	11·36	–	*1·99*	22·44	–	*3·19*	12·61	–	*4·92*	15·34	–	*2·49*
	145·05	–	*23·24*	112·15	–	*11·55*	125·89	–	*9·35*	216·66	–	*17·17*	99·58	–	*8·33*	147·65	–	*14·63*

* Killed in action 82; died out of Hospital, in other Hospitals, or on Leave at their Homes, 109. Total Mortality of the Year, 19·73 per 1,000.

Note.—The words and figures printed in *italics* were printed in red in the original.

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the Gaol Population in the various Provinces of the *Bengal* Presidency, for the Year 1859.

DISEASES.	BENGAL PROPER AND ASSAM. (Excluding the Behar Provinces.)			BEHAR PROVINCES, BENARES AND OUDE, EASTERN DOAB AND BUNDELCUND.			NAGPORE AND CENTRAL INDIA.			ROHILCUND, MEERUT, AND AGRA.			PUNJAB.			BENGAL PRESIDENCY.		
	Average Strength - 15,359 Daily Sick per cent. of Strength - - 5·45 Admitted per cent. of Strength - - 154·30 *Died per 1,000 of Strength—* *A. Cholera - - 18·95* *B. Gaol Fever - —* *C. All Causes - 105·15*			Average Strength - 8,605 Daily Sick per cent. of Strength - - 5·76 Admitted per cent. of Strength - - 131·37 *Died per 1,000 of Strength—* *A. Cholera - - 12·55* *B. Gaol Fever - —* *C. All Causes - 115·51*			Average Strength - 4,844 Daily Sick per cent. of Strength - - 7·16 Admitted per cent. of Strength - - 135·57 *Died per 1,000 of Strength—* *A. Cholera - - ·21* *B. Gaol Fever - —* *C. All Causes - 81·75*			Average Strength - 7,196 Daily Sick per cent. of Strength - - - 4·91 Admitted per cent. of Strength - - - 145·64 *Died per 1,000 of Strength—* *A. Cholera - - —* *B. Gaol Fever - —* *C. All Causes - 86·71*			Average Strength - 10,729 Daily Sick per cent. of Strength - - - 4·09 Admitted per cent. of Strength - - - 97·08 *Died per 1,000 of Strength—* *A. Cholera - - —* *B. Gaol Fever - —* *C. All Causes - 22·28*			Average Strength - 46,733 Daily Sick per cent. of Strength - - - 5·29 Admitted per cent. of Strength - - - 133·63 *Died per 1,000 of Strength—* *A. Cholera - - 8·58* *B. Gaol Fever - —* *C. All Causes - 82·77*		
	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*
Cholera - - -	4·06	46·71	*18·95*	2·45	51·18	*12·55*	·10	20·00	*·21*	·20	—	- -	·01	—	- -	1·84	46·57	*8·58*
Small-pox - - -	·18	33·33	*·59*	·42	5·56	*·23*	- -	—	- -	·09	—	- -	·09	11·11	*·10*	·16	14·86	*·24*
Fevers - - -	46·13	1·03	*4·75*	48·93	2·90	*14·18*	50·68	3·46	*17·55*	51·36	2·73	*14·03*	34·78	1·40	*4·58*	44·49	2·18	*9·70*
Dysentery and Diarrhœa	36·60	13·91	*50·91*	33·12	19·00	*62·87*	21·72	14·54	*31·58*	24·64	16·41	*40·44*	16·30	5·30	*8·55*	27·90	14·21	*39·65*
Hepatatis - - -	·15	18·18	*·27*	·16	28·57	*·47*	·06	66·66	*·42*	·15	36·36	*·55*	·13	15·39	*·20*	·14	24·24	*·34*
Spleen Disease - -	·89	2·21	*·19*	·34	13·80	*·47*	·41	10·00	*·42*	·30	—	- -	·34	6·06	*·20*	·53	4·43	*·24*
Ophthalmia - -	3·38	—	- -	2·10	—	- -	1·92	—	- -	4·20	—	- -	3·73	—	- -	3·24	—	—
Rheumatism - -	5·62	—	- -	2·59	—	- -	5·64	—	- -	3·60	—	- -	3·36	—	- -	4·24	—	—
Scurvy - - -	·68	3·81	*·27*	·79	19·12	*1·51*	4·13	5·00	*2·06*	·09	—	- -	1·30	3·12	*·41*	1·12	5·54	*·62*
Dropsy - - -	1·38	29·38	*4·04*	·24	57·14	*1·39*	·18	100·00	*1·86*	·40	37·93	*1·53*	·03	—	- -	·55	34·51	*1·88*
Atrophy and Anœmia	2·85	20·78	*5·92*	1·48	33·86	*5·35*	1·20	75·86	*9·08*	4·67	33·93	*15·84*	·91	9·00	*·82*	2·27	25·71	*5·84*
Phthisis Pulmonalis -	·89	70·80	*6·31*	·39	61·77	*2·44*	·10	80·00	*·82*	·31	54·54	*1·67*	·10	90·00	*·92*	·45	66·83	*2·97*
Apoplexy - - -	·11	94·12	*1·04*	·15	76·92	*1·16*	·04	50·00	*·21*	·04	33·33	*·14*	·05	40·00	*·20*	·09	75·00	*·64*
Respiratory Diseases -	8·64	7·23	*6·25*	3·66	14·92	*5·45*	4·13	16·50	*6·81*	7·27	9·00	*6·53*	3·55	7·74	*2·75*	5·80	9·03	*5·24*
Abscess and Ulcer -	10·87	—	*·78*	13·09	—	*1·51*	19·86	—	*3·72*	18·93	—	*1·25*	16·19	—	*·30*	14·13	—	*1·22*
Injury - - -	4·35	—	*·59*	4·92	—	*1·39*	4·67	—	*2·89*	11·56	—	*1·39*	3·82	—	*·41*	5·37	—	*1·07*
All other Causes -	27·52	—	*4·29*	16·54	1·89	*4·54*	20·73	1·99	*4·12*	17·83	1·87	*3·34*	17·40	—	*2·24*	21·31	1·41	*4·54*
	154·30	—	*105·15*	131·37	—	*115·51*	135·57	—	*81·75*	145·64	—	*86·71*	102·09	—	*21·98*	133·63	—	*82·77*

Note.—The words and figures printed in *italics* were printed in red in the original.

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the Gaol Population in the various Provinces of the *Bengal* Presidency, for the Year 1860.

DISEASES.	BENGAL PROPER AND ASSAM. (Excluding the Behar Provinces.)			BEHAR PROVINCES, BENARES AND OUDE, EASTERN DOAB AND BUNDELCUND.			NAGPORE AND CENTRAL INDIA.			ROHILCUND, MEERUT, AND AGRA.			PUNJAB.			BENGAL PRESIDENCY.		
	Average Strength - 14,335 Daily Sick per cent. of Strength - - 6·14 Admitted per cent. of Strength - - 165·92 *Died per 1,000 of Strength—* *A. From Cholera - 38·29* *B. From Gaol Fever —* *C. From all Causes 136·10*			Average Strength - 9,511 Daily Sick per cent. of Strength - - 6·96 Admitted per cent. of Strength - - 146·01 *Died per 1,000 of Strength—* *A. From Cholera - 20·82* *B. From Gaol Fever* 27·97* *C. From all Causes 140·15*			Average Strength - 4,981 Daily Sick per cent. of Strength - - 6·17 Admitted per cent. of Strength - - 142·82 *Died per 1,000 of Strength—* *A. From Cholera - 16·06* *B. From Gaol Fever —* *C. From all Causes 65·04*			Average Strength - 7,695 Daily Sick per cent. of Strength - - 5·85 Admitted per cent. of Strength - - 186·87 *Died per 1,000 of Strength—* *A. From Cholera - 23·00* *B. From Gaol Fever† 60·82* *C. From all Causes 170·50*			Average Strength - 9,826 Daily Sick per cent. of Strength - - 3·75 Admitted per cent. of Strength - - 102·09 *Died per 1,000 of Strength—* *A. From Cholera - —.* *B. From Gaol Fever —* *C. From all Causes - 21·98*			Average Strength - 46,348 Daily Sick per cent of Strength - - 5·74 Admitted per cent. of Strength - - 149·18 *Died per 1,000 of Strength—* *A. From Cholera - 21·66* *B. From Gaol Fever 15·84* *C. From all Causes 110·81*		
	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*
Cholera - - -	8·45	45·33	*38·29*	4·73	44·00	*20·82*	3·80	42·33	*16·06*	10·70	21·51	*23·00*	·01	–	- -	5·77	37·55	*21·66*
Small-pox - - -	·47	23·88	*1·12*	·06	–	- -	·04	–	- -	·14	27·27	*·39*	·09	11·11	*·10*	·20	21·05	*·43*
Fevers - - -	53·71	1·01	*5·44*	57·33	6·29	*36·06*	53·83	2·05	*11·04*	77·22	8·67	*66·93*	34·78	1·40	*4·88*	54·36	4·12	*22·42*
Dysentery and Diarrhœa	41·25	14·76	*60·90*	34·01	16·45	*55·93*	20·82	9·64	*20·08*	26·13	15·86	*41·45*	16·30	5·30	*8·55*	29·77	13·83	*41·17*
Hepatitis - - -	·21	32·26	*·70*	·03	33·33	*·10*	·22	9·10	*·20*	·16	66·66	*1·04*	·13	15·39	*·20*	·15	31·43	*·47*
Spleen Disease - -	·80	4·35	*·35*	·48	13·04	*·63*	·40	5·00	*·20*	·24	11·11	*·26*	·34	6·06	*·20*	·50	6·90	*·35*
Ophthalmia - -	3·57	–	- -	2·33	–	- -	2·23	–	- -	2·72	–	- -	3·73	–	- -	3·06	—	—
Rheumatism - -	4·79	–	- -	2·40	–	- -	4·18	–	- -	2·40	–	- -	3·36	–	- -	3·53	—	—
Scurvy - - -	·90	6·20	*·56*	·47	15·56	*·74*	1·44	5·55	*·80*	·03	–	- -	1·30	3·12	*·41*	·81	6·12	*·49*
Dropsy - - -	1·11	43·75	*4·88*	·27	38·46	*1·05*	·12	66·66	*·80*	·21	37·50	*·78*	·03	–	- -	·45	42·65	*1·94*
Atrophy and Anœmia	2·58	20·27	*5·23*	2·62	23·29	*6·10*	1·60	30·00	*4·82*	7·27	23·93	*17·41*	·91	9·00	*·82*	5·67	11·38	*6·45*
Phthisis Pulmonalis -	·85	71·31	*6·07*	·24	82·61	*2·00*	·08	75·00	*·60*	·39	63·33	*2·47*	·10	90·00	*·92*	·41	72·48	*2·96*
Apoplexy - - -	·10	71·43	*·70*	·22	76·19	*1·68*	·04	100·00	*·40*	·10	50·00	*·52*	·05	40·00	*·20*	·11	68·00	*·74*
Respiratory Diseases -	6·39	8·84	*5·65*	3·33	15·46	*5·15*	4·49	4·91	*2·21*	5·17	16·83	*8·71*	3·55	7·74	*2·75*	4·74	10·70	*5·07*
Abscess and Ulcer -	11·21	–	- -	17·46	–	*3·89*	23·95	–	*1·81*	13·59	–	*·78*	16·19	-	*·30*	15·32	-	*1·12*
Injury - - -	4·07	–	- -	4·09	–	*·95*	4·68	–	*1·61*	8·71	–	*1·04*	3·82	–	*·41*	4·83	–	*·75*
All other Causes -	25·46	–	*6·21*	15·94	–	*5·05*	20·90	–	*4·41*	31·69	–	*5·72*	17·40	–	*2·24*	19·50	1·44	*4·79*
	165·92	–	*136·10*	146·01	–	*140·15*	142·82	–	*65·04*	186·87	–	*170·50*	102·09	–	*21·98*	149·18	–	*110·81*

* Gaol Fever at Allahabad and Lucknow. † Gaol Fever at Meerut and Agra.

Note.—The words and figures printed in *italics* were printed in red in the original.

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the Gaol Population in the various Provinces of the *Bengal* Presidency, for the Year 1861.

DISEASES.	BENGAL PROPER AND ASSAM (EXCLUDING THE BEHAR PROVINCES). Average Strength - 13,924; Daily Sick per cent. of Strength - 5·77; Admitted per cent. of Strength - 150·26; *Died per 1,000 of Strength— A. From Cholera - 13·21; B. From Gaol Fever —; C. From all Causes - 87·69*			BEHAR PROVINCES, BENARES AND OUDE, EASTERN DOAB AND BUNDELCUND. Average Strength - 11,398; Daily Sick per cent. of Strength - 4·89; Admitted per cent. of Strength - 114·72; *Died per 1,000 of Strength— A. From Cholera - 11·84; B. From Gaol Fever —; C. From all Causes - 76·07*			NAGPORE AND CENTRAL INDIA. Average Strength - 5,089; Daily Sick per cent. of Strength - 4·91; Admitted per cent. of Strength - 109·80; *Died per 1,000 of Strength— A. From Cholera - 2·36; B. From Gaol Fever —; C. From all Causes - 34·00*			ROHILCUND, MEERUT, AND AGRA. Average Strength - 9,669; Daily Sick per cent. of Strength - 3·52; Admitted per cent. of Strength - 139·90; *Died per 1,000 of Strength— A. From Cholera - 44·33; B. From Gaol Fever *51·92; C. From all Causes, 183·68*			PUNJAB. Average Strength - 10,835; Daily Sick per cent. of Strength - 4·68; Admitted per cent. of Strength - 127·36; *Died per 1,000 of Strength— A. From Cholera - 4·43; B. From Gaol Fever †29·17; C. From all Causes - 81·59*			BENGAL PRESIDENCY. Average Strength - 50,915; Daily Sick per cent. of Strength - 4·83; Admitted per cent. of Strength - 131·42; *Died per 1,000 of Strength— A. From Cholera - 15·21; B. From Gaol Fever 16·07; C. From all Causes - 96·65*		
	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*
Cholera	3·40	38·82	*13·21*	3·21	36·88	*11·84*	·55	42·86	*2·36*	9·22	44·33	*40·85*	·92	48·00	*4·43*	3·65	41·63	*15·21*
Small-pox	·10	14·29	*·14*	·26	3·45	*·09*	·04	–	–	·03	–	–	·02	–	–	·10	6·00	*·06*
Fevers	56·24	·91	*5·10*	41·31	1·74	*7·19*	41·76	1·32	*5·50*	61·20	9·90	*60·61*	60·81	5·60	*34·06*	53·36	4·19	*22·31*
Dysentery & Diarrhœa	34·63	12·75	*44·17*	27·09	15·00	*40·62*	12·79	11·21	*14·35*	23·12	23·18	*53·57*	20·30	13·19	*26·76*	25·52	15·08	*38·47*
Hepatitis	·17	–	*·65*	·16	–	*·17*	–	–	–	·14	–	*·41*	·07	–	–	·12	23·44	*·30*
Spleen Disease	·85	5·93	*·50*	·24	29·63	*·70*	·19	–	–	·23	–	–	·80	4·60	*·37*	·52	7·20	*·37*
Ophthalmia	2·24	–	–	1·55	–	–	1·55	–	–	1·54	–	–	2·77	–	–	2·00	–	*·37*
Rheumatism	4·47	–	–	2·04	–	–	2·91	–	–	1·31	–	–	1·84	–	–	2·61	–	*·41*
Scurvy	·81	–	*·43*	·29	–	*·35*	2·32	–	*2·55*	·05	–	*·10*	1·39	–	*·92*	·82	8·13	*·67*
Dropsy	1·11	31·17	*3·45*	·38	44·19	*1·67*	·16	62·50	*·98*	·28	25·93	*·73*	·09	66·66	*·55*	·45	35·52	*1·59*
Atrophy and Anœmia	1·50	23·08	*3·45*	1·55	17·04	*2·63*	·63	21·87	*1·38*	2·60	38·24	*9·93*	1·46	19·62	*2·86*	1·62	25·70	*4·16*
Phthisis Pulmonalis	·60	88·10	*5·31*	·10	54·55	*·54*	·10	60·00	*·59*	·32	61·30	*1·96*	·05	20·00	*·10*	·27	75·73	*2·02*
Apoplexy	·06	77·78	*·50*	·14	87·50	*1·23*	·04	50·00	*·20*	·14	30·00	*·41*	·06	100·00	*·55*	·09	68·09	*·63*
Respiratory Diseases	4·81	10·31	*4·96*	2·72	11·58	*3·16*	2·43	9·68	*2·36*	3·55	13·12	*4·66*	2·99	15·43	*4·61*	3·47	12·05	*4·18*
Abscess and Ulcer	8·88	–	–	10·93	–	–	16·29	–	–	12·45	–	–	13·73	–	–	11·79	–	*1·16*
Injury	3·91	–	–	4·34	–	–	4·48	–	–	6·99	–	–	4·27	–	–	4·73	–	*·77*
All other Diseases	26·48	–	*5·82*	18·41	–	*5·88*	23·56	–	*3·73*	16·73	–	*10·45*	15·79	–	*6·38*	20·30	–	*3·97*
	150·26	–	*87·69*	114·72	–	*76·07*	109·80	–	*34·00*	139·90	–	*183·68*	127·36	–	*81·59*	131·42	–	*96·65*

* Gaol Fever at Allyghur and Meerut.

† Gaol Fever at Thanesur, Umballa, Loodianah, and Jullundur.

Note.—The words and figures printed in *italics* were printed in red in the original.

GAOLS OF THE BENGAL PRESIDENCY, 1862.

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the Gaol Population in the various Provinces of the *Bengal* Presidency, for the Year 1862.

DISEASES.	BENGAL PROPER AND ASSAM (EXCLUDING THE BEHAR PROVINCES). Average Strength - 14,692; Daily Sick per cent. of Strength - - - 5·78; Admitted per cent. of Strength - - - 163·42; *Died per 1,000 of Strength— A. From Cholera - 9·94; B. From Gaol Fever —; C. From all Causes - 78·61*			BEHAR PROVINCES, BENARES AND OUDE, EASTERN DOAB AND BUNDELCUND. Average Strength - 13,975; Daily Sick per cent. of Strength - - - 3·86; Admitted per cent. of Strength - - - 104·59; *Died per 1,000 of Strength— A. From Cholera - ·79; B. From Gaol Fever —; C. From all Causes - 51·31*			NAGPORE AND CENTRAL INDIA. Average Strength - 5,316; Daily Sick per cent. of Strength - - - 4·95; Admitted per cent. of Strength - - - 141·03; *Died per 1,000 of Strength— A. From Cholera - 4·70; B. From Gaol Fever —; C. From all Causes - 39·69*			ROHILCUND, MEERUT, AND AGRA. Average Strength - 8,534; Daily Sick per cent. of Strength - - - 4·72; Admitted per cent. of Strength - - - 151·45; *Died per 1,000 of Strength— A. From Cholera - 1·99; B. From Gaol Fever *46·64; C. From all Causes - 97·02*			PUNJAB. Average Strength - 10,354; Daily Sick per cent. of Strength - - - 3·95; Admitted per cent. of Strength - - - 117·06; *Died per 1,000 of Strength— A. From Cholera - 8·98; B. From Gaol Fever †18·54; C. From all Causes - 59·69*			BENGAL PRESIDENCY. Average Strength - - 52,871; Daily Sick per cent. of Strength - - - 4·66; Admitted per cent. of Strength - - - 134·61; *Died per 1,000 of Strength— A. From Cholera - 5·52; B. From Gaol Fever 11·16; C. From all Causes 66·75*		
	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*
Cholera	2·89	34·35	*9·94*	·32	24·44	*·79*	1·19	40·00	*4·70*	·40	50·00	*1·99*	2·28	39·41	*8·98*	1·52	36·36	*5·52*
Small-pox	·08	–	–	·42	3·40	*·14*	·11	–	–	·05	–	–	·02	–	–	·16	2·41	*·04*
Fevers	61·43	·92	*5·65*	38·46	1·52	*5·87*	59·78	1·23	*7·34*	86·74	6·27	*54·37*	56·76	5·07	*28·78*	58·36	3·13	*18·27*
Dysentery & Diarrhœa	40·28	10·09	*40·63*	23·17	13·84	*32·06*	17·38	10·61	*18·43*	15·30	15·70	*24·02*	17·11	7·28	*12·46*	24·88	11·22	*27·94*
Hepatitis	·22	15·63	*·34*	·08	8·33	*·07*	·04	–	*·19*	·01	–	*·12*	·05	–	*·10*	·10	17·31	*·17*
Spleen Disease	1·23	5·55	*·68*	·23	18·75	*·43*	·39	–	–	·42	–	*·13*	·85	–	*·10*	·68	5·04	*·34*
Ophthalmia	2·51	–	–	1·53	–	–	1·92	–	–	1·58	–	–	2·17	–	–	1·98	–	*·15*
Rheumatism	4·44	–	–	2·41	–	–	3·82	–	–	1·71	–	–	2·04	–	–	2·93	–	*·27*
Scurvy	·74	–	–	·13	–	–	·86	–	–	·05	–	–	1·45	–	–	·62	6·12	*·38*
Dropsy	1·43	26·19	*3·74*	·21	48·28	*1·00*	·23	33·33	*·75*	·06	80·00	*·47*	·09	20·00	*·19*	·50	29·70	*1·49*
Atrophy and Anœmia	1·40	13·11	*2·25*	·78	22·93	*1·79*	·77	24·40	*1·88*	1·12	32·30	*3·63*	2·23	6·06	*1·35*	1·55	13·81	*2·14*
Phthisis Pulmonalis	·75	65·77	*5·24*	·08	81·81	*·65*	·19	10·00	*·19*	·24	45·00	*1·05*	·07	42·86	*·29*	·30	62·26	*1·87*
Apoplexy	·13	68·42	*·88*	·06	66·66	*·43*	·06	33·33	*·19*	·08	71·43	*·59*	·03	–	*·10*	·08	63·41	*·49*
Respiratory Diseases	4·15	11·47	*4·77*	2·23	12·82	*2·86*	3·43	6·59	*2·26*	2·11	16·11	*3·39*	2·65	10·58	*2·80*	2·93	11·60	*3·40*
Abscess and Ulcer	11·97	–	–	11·01	–	–	19·06	–	–	11·45	–	–	13·50	–	–	12·64	–	*·85*
Injury	4·07	–	–	3·65	–	–	4·34	–	–	6·25	–	–	2·58	–	–	4·05	–	*·59*
All other Diseases	25·70	–	*4·49*	19·82	–	*5·22*	27·46	–	*3·76*	23·88	–	*7·27*	13·18	–	*4·54*	21·33	–	*2·84*
	163·42	–	*78·61*	104·59	–	*51·31*	141·03	–	*39·69*	151·45	–	*97·02*	117·06	–	*59·69*	134·61	–	*66·75*

* Gaol Fever at Agra, Meerut, Allyghur, Budaon, and Bareilly.

† Gaol Fever at Umballa, Loodianah, and Jullundur.

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GAOLS OF THE BENGAL PRESIDENCY, 1863.

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the Gaol Population in the various Provinces of the *Bengal* Presidency, for the Year 1863.

DISEASES.	BENGAL PROPER AND ASSAM (EXCLUDING THE BEHAR PROVINCES). Average Strength - 15,087; Daily Sick per cent. of Strength - 5·67; Admitted per cent. of Strength - 170·47; *Died per 1,000 of Strength— A. From Cholera - 20·15; B. From Gaol Fever —; C. From all Causes - 92·73*			BEHAR PROVINCES, BENARES AND OUDE, EASTERN DOAB AND BUNDELCUND. Average Strength - 14,664; Daily Sick per cent. of Strength - 4·29; Admitted per cent. of Strength - 117·40; *Died per 1,000 of Strength— A. From Cholera - 23·94; B. From Gaol Fever —; C. From all Causes - 97·73*			NAGPORE AND CENTRAL INDIA. Average Strength - 4,975; Daily Sick per cent. of Strength - 5·75; Admitted per cent. of Strength - 152·54; *Died per 1,000 of Strength— A. From Cholera - 10·05; B. From Gaol Fever *7·84; C. From all Causes - 73·37*			ROHILCUND, MEERUT, AND AGRA. Average Strength - 8,043; Daily Sick per cent. of Strength - 4·56; Admitted per cent. of Strength - 129·28; *Died per 1,000 of Strength— A. From Cholera - 5·72; B. From Gaol Fever †41·40; C. From all Causes - 82·80*			PUNJAB. Average Strength - 9,632; Daily Sick per cent. of Strength - 4·34; Admitted per cent. of Strength - 112·65; *Died per 1,000 of Strength— A. From Cholera - —; B. From Gaol Fever ‡21·39; C. From all Causes - 66·03*			BENGAL PRESIDENCY. Average Strength - 52,401; Daily Sick per cent. of Strength - 4·88; Admitted per cent. of Strength - 136·88; *Died per 1,000 of Strength— A. From Cholera - 14·33; B. From Gaol Fever 11·70; C. From all Causes 85·84*		
	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	*Died per 1,000 of Average Strength.*
Cholera	5·32	37·90	*20·15*	5·64	42·44	*23·94*	2·58	39·06	*10·05*	1·43	40·00	*5·72*	-	-	-	3·58	40·10	*14·33*
Small-pox	·15	4·35	*·06*	·25	5·40	*·13*	·10	40·00	*·40*	·01	–	-	-	-	-	·13	7·58	*·10*
Fevers	63·50	·71	*4·51*	35·91	1·52	*5·46*	66·35	2·12	*14·07*	68·59	6·73	*46·13*	57·61	5·71	*32·91*	55·75	3·12	*17·40*
Dysentery & Diarrhœa	41·80	11·27	*47·13*	33·31	15·15	*50·46*	20·96	16·40	*34·37*	13·76	13·28	*18·28*	15·03	10·01	*15·05*	28·22	12·94	*36·53*
Hepatitis	·25	–	*·33*	·03	–	-	-	–	-	-	–	-	·17	12·50	*·21*	·11	11·86	*·13*
Spleen Disease	1·28	6·22	*·80*	·28	9·76	*·28*	·32	–	-	·48	–	-	·55	3·77	*·21*	·65	5·26	*·34*
Ophthalmia	1·71	–	-	2·83	–	-	1·39	–	-	1·96	–	-	2·62	–	-	2·20	–	-
Rheumatism	4·28	–	-	2·01	–	-	3·86	–	-	1·84	–	-	1·63	–	-	2·74	–	*·32*
Scurvy	·50	–	-	·18	3·85	*·07*	·50	–	-	·14	–	*·12*	1·42	4·37	*·62*	·52	–	*·15*
Dropsy	1·50	28·63	*4·31*	·09	53·85	*·48*	·14	57·14	*·80*	·09	28·57	*·25*	·14	46·15	*5·50*	·51	19·10	*1·60*
Atrophy and Anœmia	1·32	17·08	*2·25*	1·27	37·64	*4·77*	·76	23·69	*1·81*	·82	34·85	*2·86*	3·14	17·55	*·62*	1·51	24·14	*3·65*
Phthisis Pulmonalis	·62	68·82	*4·24*	·23	38·24	*·89*	·08	100·00	*1·01*	·28	63·64	*1·74*	·15	50·00	*·73*	·32	65·27	*2·08*
Apoplexy	·05	50·00	*·27*	·04	83·33	*·34*	·10	80·00	*·81*	·05	75·00	*·37*	·08	100·00	*·83*	·06	72·41	*·40*
Respiratory Diseases	4·88	8·02	*3·91*	3·14	13·45	*4·23*	3·22	10·62	*3·42*	2·59	9·13	*2·36*	2·54	13·52	*3·43*	3·45	10·50	*3·63*
Abscess and Ulcer	11·51	–	-	10·28	–	*1·16*	19·82	–	-	9·21	–	-	11·09	–	-	11·69	–	*·82*
Injury	3·57	–	-	3·24	–	*·48*	4·46	–	-	5·56	–	-	2·96	–	-	3·63	–	*·53*
All other Diseases	28·23	–	*4·77*	18·67	–	*5·04*	27·90	–	*6·63*	22·47	–	*4·97*	13·52	–	*5·92*	21·81	–	*3·84*
	170·47	–	*92·73*	117·40	–	*97·73*	152·54	–	*73·37*	129·28	–	*82·80*	112·65	–	*66·03*	136·88	–	*85·84*

* Gaol Fever at Raipore.

† Gaol Fever at Agra, Muttra, Allyghur, Bareilly, Moradabad, and Delhi.

‡ Gaol Fever at Lahore and Mooltan.

Note.—The words and figures printed in *italics* were printed in red in the original.

EUROPEAN AND NATIVE ARMIES, 1860-63.

TABLE showing in detail the CAUSES of ADMISSIONS into HOSPITAL, and of DEATHS in HOSPITAL, for the EUROPEAN and NATIVE ARMIES of the *Bengal* Presidency, since the introduction of the System of Statistical Nomenclature now in use.

The Results shown in the case of the European Army should not be critically compared with those contained in the Tables which follow; the details here given represent, in summary, the number and causes of Admissions and Deaths shown in the Annual Returns furnished by Regiments, and these, in some years, it has been found impossible to obtain in a state of completeness.

DISEASES.	EUROPEAN ARMY.								NATIVE ARMY.					
	1860.		1861.		1862.		1863.		1861.		1862.		1863.	
	Av. Strgh. 48,318 Daily Sick 3,770 Admiss. 96,130 *Deaths - 1,606*		Av. Strgh. 42,977 Daily Sick 3,128 Admiss. 83,406 *Deaths - 1,796*		Av. Strgh. 43,541 Daily Sick 3,013 Admiss. 81,610 *Deaths - 1,070*		Av. Strgh. 41,471 Daily Sick 2,765 Admiss. 74,822 *Deaths - 786*		Av. Strgh. 39,797 Daily Sick 1,595 Admiss. 46,520 *Deaths - 668*		Av. Strgh. 35,922 Daily Sick 1,610 Admiss. 49,737 *Deaths - 502*		Av. Strgh. 37,459 Daily Sick 1,733 Admiss. 55,370 *Deaths - 548*	
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*
Variola	150	*23*	213	*34*	15	*2*	44	*10*	128	*22*	24	*3*	51	*10*
Varicella	20	–	29	–	5	–	2	–	26	–	17	–	10	–
Morbilli	21	–	13	–	3	–	5	–	4	–	7	–	13	–
Scarlatina	1	*1*	2	*2*	–	–	1	–	–	–	–	–	1	–
Tonsillitis	883	*1*	761	*2*	630	*1*	594	–	73	–	56	–	63	–
Parotitis	10	–	17	–	18	–	20	–	40	–	66	–	80	–
Fever, Intermittent	17,764	*30*	18,486	*37*	24,446	*40*	23,762	*56*	22,909	*85*	27,059	*105*	28,236	*107*
„ Remittent	4,939	*108*	3,207	*45*	2,423	*50*	2,205	*37*	665	*69*	377	*35*	691	*47*
„ Continued	11,173	*87*	8,142	*92*	6,848	*60*	3,891	*47*	130	*4*	50	*8*	42	*5*
Ophthalmia	3,707	–	2,696	–	2,421	–	1,973	–	792	–	841	–	909	–
Erysipelas	87	*4*	83	*3*	65	*2*	56	*2*	19	*5*	25	*1*	17	*4*
Erythema	13	–	9	–	9	–	10	–	5	–	6	–	6	–
Pyœmia	–	–	–	–	–	*1*	1	*1*	1	*1*	–	–	–	–
Gangrœna	1	–	–	–	–	–	1	–	2	*1*	1	–	19	*3*
Anthrax	5	*1*	8	–	10	*1*	9	–	8	–	8	–	8	–
Furunculus	193	–	407	–	476	–	452	–	209	–	114	–	216	*1*
Influenza	44	–	196	–	262	–	300	–	84	*1*	93	*1*	86	–
Dysenteria	3,497	*216*	2,444	*157*	1,930	*93*	1,997	*107*	2,446	*69*	2,439	*64*	3,192	*74*
Diarrhœa	6,499	*47*	6,366	*64*	4,977	*42*	3,895	*31*	1,817	*57*	1,619	*24*	2,250	*36*
Cholera	951	*497*	1,557	*957*	672	*410*	251	*163*	389	*163*	179	*90*	100	*57*
Rheumatismus	3,534	*5*	3,204	*2*	3,127	*3*	3,223	*4*	1,839	*5*	1,853	*5*	1,798	*3*
Syphilis Primaria	5,734	–	6,037	*1*	5,070	*1*	4,069	–	1,131	*2*	901	–	806	*3*
„ Secundaria	1,231	*8*	1,181	*11*	1,132	*5*	1,226	*7*	221	*1*	203	*2*	198	*1*
Iritis Syphilitica	18	–	51	–	39	–	30	–	–	–	–	–	–	–
Gonorrhœa	5,127	–	5,025	–	4,423	–	3,902	–	456	–	415	–	337	–
Bubo	2,336	*1*	1,991	*1*	2,058	–	1,849	*1*	463	–	422	*2*	357	–
Phymosis	70	–	62	–	54	–	50	–	34	–	17	–	14	–
Orchitis	560	–	588	*1*	363	–	315	–	204	–	185	–	140	–
Verruca	156	–	74	–	71	–	60	–	–	–	–	–	1	–
Condyloma	44	–	21	–	22	–	8	–	4	–	1	–	3	–
Hydrophobia	4	*4*	2	*2*	3	*3*	2	*2*	1	*1*	–	–	–	–
Scorbutus	126	*1*	35	–	51	–	39	*1*	39	*1*	41	–	62	–
Ebriositas	361	–	426	*2*	378	*1*	391	*3*	7	–	7	–	10	*2*
Bronchocele	–	–	–	–	–	–	–	–	5	–	15	–	12	–
Aphthæ	4	–	5	–	3	–	1	–	11	–	15	–	6	–
Porrigo	13	–	7	–	9	–	15	–	–	–	–	–	–	–
Scabies	25	–	35	–	50	–	62	–	362	–	342	–	601	–
Vermes	134	–	98	–	41	–	50	–	5	–	7	–	1	–
„ Tœnia	84	–	129	–	200	–	219	–	1	–	1	–	6	–
„ Dracunculus	46	–	8	–	4	–	–	–	17	–	37	–	89	–
Podagra	–	–	–	–	1	–	8	–	–	–	–	–	–	–
Scirrhoma	1	–	4	*2*	2	*1*	2	*1*	2	–	–	–	1	–
Lupus	5	–	4	–	2	–	5	–	–	–	–	–	–	–
Anœmia	–	–	104	*3*	–	–	103	*2*	13	*1*	17	–	24	–
Anasarca	39	*3*	30	*1*	28	*3*	30	*4*	35	*6*	26	*4*	37	*4*
Scrofula	118	–	94	–	105	*1*	91	*1*	13	*3*	8	*1*	9	–
Phthisis Pulmonalis	280	*81*	260	*67*	249	*64*	315	*78*	41	*21*	30	*18*	24	*10*
Hæmoptysis	69	*3*	95	*3*	86	–	59	*3*	24	*1*	29	*2*	7	–
Morbus Coxæ	6	–	–	–	–	–	3	*1*	–	–	–	–	–	–
Abscessus Psoanus	1	–	1	*1*	–	–	3	–	1	*1*	–	–	–	–
Meningitis	2	*2*	5	*4*	10	*1*	9	*6*	3	*1*	5	*2*	4	*2*
Myelitis	–	–	–	–	–	–	1	–	–	–	–	–	–	–
Encephalitis	11	*6*	4	*2*	7	*2*	4	–	–	–	–	–	–	–
Apoplexia et Insolatio	289	*121*	119	*54*	99	*41*	127	*43*	16	*8*	19	*12*	20	*12*
Paralysis	79	*4*	43	*4*	48	*6*	69	*7*	35	–	50	*3*	33	*4*
Delirium Tremens	371	*36*	174	*18*	126	*16*	154	*14*	1	–	2	–	2	–
Hysteria	–	–	–	–	13	–	4	–	–	–	–	–	–	–
Chorea	–	–	–	–	2	–	2	–	–	–	–	–	–	–
Epilepsia	261	–	147	*1*	155	–	158	*2*	17	*1*	20	*3*	23	*3*
Tetanus	3	–	1	–	3	*1*	–	–	–	–	1	–	4	*2*
Mania	41	*2*	44	*1*	43	*1*	67	*1*	26	–	12	*1*	25	*2*
Monomania	5	–	3	–	–	–	–	–	–	–	–	–	–	–
Dementia	68	*1*	54	–	52	–	61	*1*	3	–	3	–	5	–
Melancholia	6	–	–	–	–	–	1	–	–	–	–	–	–	–
Cephalœa	257	*1*	212	*1*	283	–	272	*1*	55	–	60	–	52	–
Vertigo	28	–	3	–	4	–	–	–	3	–	2	–	–	–
Neuralgia	78	–	112	–	102	–	226	–	104	–	73	–	62	–
Sciatica	43	–	16	–	3	–	1	–	4	–	5	–	8	–
Odontalgia	15	–	2	–	1	–	–	–	24	–	23	–	15	–
Otitis	392	–	391	–	349	–	347	–	192	–	222	–	216	–

Note.—The words and figures printed in *italics* were printed in red in the original.

EUROPEAN and NATIVE ANNUITIES, 1860-63—*continued*

TABLE showing in detail the Causes of Admissions into Hospital, and of Deaths in Hospital, &c.—*continued*.

DISEASES.	EUROPEAN ARMY.								NATIVE ARMY.					
	1860.		1861.		1862.		1863.		1861.		1862.		1863.	
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*
Dysecœa	21	–	40	–	25	–	39	–	7	–	6	–	7	–
Amaurosis	13	–	19	–	1	–	12	–	5	–	6	–	7	–
Nyctalopia	–	–	–	–	4	–	–	–	14	–	6	–	46	–
Pericarditis	24	–	35	*2*	16	–	11	*2*	4	–	–	–	1	–
Endocarditis	240	*20*	252	*12*	202	*7*	230	*12*	6	*1*	–	*4*	12	*3*
Palpitatio	211	–	95	*1*	34	–	56	–	1	–	–	–	1	–
Aneurisma	6	*3*	17	*5*	21	*9*	10	*5*	–	–	–	–	2	–
Syncope	3	*1*	10	–	3	–	4	–	2	*1*	1	–	–	–
Angina Pectoris	3	–	7	–	12	*1*	9	–	1	*1*	7	–	3	*1*
Varix	40	–	23	–	28	–	25	–	1	–	–	–	8	–
Phlebitis	5	–	4	–	–	–	2	–	1	–	–	–	–	–
Epistaxis	36	–	25	–	20	–	16	–	6	–	5	–	2	–
Laryngitis	–	–	20	–	18	*1*	25	*1*	11	–	3	–	6	–
Bronchitis	2,687	*13*	1,895	*13*	1,551	*13*	1,702	*11*	652	*28*	556	*25*	726	*25*
Pleuritis	133	*3*	201	*3*	133	*2*	132	*1*	109	*6*	97	*4*	116	–
Hydrothorax	2	–	2	*1*	–	–	–	–	–	–	–	–	–	–
Empyema	2	*1*	–	–	–	–	–	–	–	–	–	–	–	–
Pneumonia	177	*22*	166	*31*	103	*16*	109	*19*	134	*20*	143	*28*	136	*23*
Asthma	37	–	39	*1*	43	*3*	34	*3*	144	*6*	93	*2*	112	*6*
Dyspnœa	18	*2*	–	–	–	–	–	–	–	–	–	–	–	–
Stomatitis	11	–	15	–	12	–	8	–	34	–	13	–	14	–
Pharyngitis	3	–	9	–	3	–	4	*1*	3	–	1	–	1	*1*
Gastritis	46	*3*	42	*5*	53	*2*	29	*2*	13	*1*	3	–	6	–
Enteritis	21	*2*	18	*2*	22	*8*	17	*3*	3	*1*	12	*5*	6	*3*
Peritonitis	20	*3*	19	*5*	29	*10*	11	*3*	15	*6*	8	*1*	5	*2*
Obstipatio	287	–	177	–	133	–	108	–	49	–	74	*2*	55	–
Ileus	3	*1*	–	–	5	*2*	1	–	3	*2*	–	–	–	–
Hernia	71	–	51	–	40	–	62	–	19	–	11	*1*	9	*1*
Dyspepsia	1,178	*2*	989	*1*	935	*1*	982	*1*	286	–	304	–	364	–
Colica	1,333	*2*	822	*2*	651	–	613	–	663	*3*	745	*1*	680	*2*
Hæmatemesis	9	*1*	16	–	18	–	15	*1*	12	*1*	5	–	10	–
Mœlœna	1	*1*	1	*1*	1	–	–	–	–	–	–	–	–	–
Hæmorrhois	555	*1*	495	*1*	502	*1*	488	–	114	–	142	–	132	*1*
Fistula in Ano	45	*1*	36	*1*	44	–	52	–	8	–	14	–	12	–
Splenitis	358	*3*	319	*3*	388	*3*	458	*1*	303	*13*	326	*6*	453	*15*
Hepatitis	3,071	*169*	2,520	*101*	2,569	*104*	2,719	*124*	62	*8*	70	*7*	72	*2*
Icterus	244	*2*	270	*2*	286	*4*	220	*5*	39	*4*	76	*2*	49	*6*
Cirrhosis	–	–	–	–	–	–	1	*1*	–	–	–	–	–	–
Ascites	19	*6*	34	*2*	19	*2*	23	*4*	9	*4*	5	*2*	4	–
Nephritis	42	*2*	41	*2*	37	*3*	41	*4*	31	*1*	16	–	21	–
Albumenuria	3	–	6	*2*	–	–	1	–	–	–	–	–	1	*1*
Hæmaturia	6	–	7	–	15	*1*	12	*1*	10	–	–	–	6	–
Ischuria	27	*6*	17	*1*	22	–	21	–	19	*1*	10	–	12	*1*
Eneuresis	4	–	12	–	8	–	13	–	–	–	–	–	3	–
Diuresis et Diabetes	7	–	17	–	15	–	9	–	1	–	1	–	2	–
Cystitis	11	–	17	*1*	16	–	15	–	6	–	1	*1*	3	*1*
Calculus vesicæ	–	–	–	–	–	–	–	–	4	*3*	1	–	–	–
Strictura urethræ	128	*1*	112	–	132	*1*	126	*1*	16	–	4	–	13	*1*
Fistula in Perineo	2	–	1	–	4	–	1	–	1	–	–	–	–	–
Varicocele	9	–	15	–	6	–	8	–	4	–	1	–	–	–
Orchitis	626	–	544	–	735	*1*	775	–	57	–	84	–	75	–
Hydrocele	32	–	15	–	23	–	31	–	23	–	14	–	16	–
Hæmatocele	2	–	–	–	–	–	–	–	–	–	–	–	–	–
Lumbago	155	–	30	–	78	–	80	–	48	–	68	–	80	–
Pleurodynia	66	–	22	–	56	–	24	–	2	–	4	–	7	–
Arthritis	36	*1*	30	–	18	–	46	–	3	–	8	–	7	–
Synovitis	55	–	83	–	69	*1*	85	*1*	19	*1*	12	–	2	–
Contractura	17	–	16	–	7	–	5	–	7	–	2	–	6	–
Periostitis	58	–	66	–	84	–	109	*1*	16	*1*	11	–	9	–
Exostosis	5	–	10	–	–	–	–	–	–	–	–	–	–	–
Necrosis	12	*1*	12	*1*	10	–	23	–	1	–	2	–	1	–
Caries	8	*1*	13	–	25	–	5	–	3	–	6	–	2	–
Skin diseases	460	–	311	–	341	–	419	–	501	–	454	–	452	*1*
Phlegmon and Abscess	3,154	*3*	2,269	*1*	1,965	–	1,790	*2*	2,192	*3*	2,154	*2*	2,376	*3*
Whitlow	175	–	154	*1*	203	–	168	–	68	–	66	–	97	–
Ulcer	2,447	–	1,614	–	1,718	*1*	1,496	–	2,098	*1*	2,157	*1*	2,297	*3*
Tumour	37	*2*	22	–	26	–	23	–	6	–	4	–	7	–
Atrophy and Asthenia	633	*11*	274	*8*	453	*11*	327	*7*	328	*16*	308	*11*	1,222	*13*
Burning	47	*1*	39	–	54	*2*	82	*2*	–	–	–	–	–	–
Dislocation	56	–	51	–	44	–	28	–	–	–	–	–	–	–
Subluxation	748	–	643	–	664	–	643	–	–	–	–	–	–	–
Fracture	169	*4*	135	*3*	137	*1*	144	*1*	–	–	–	–	–	–
Contusion	2,807	*5*	2,133	*2*	2,204	–	2,289	*2*	2,905*	*3*	3,497*	*11*	4,279*	*20*
Concussion of Brain	1	*1*	5	–	12	–	8	*3*	–	–	–	–	–	–
Gun-shot wound	35	–	17	*4*	18	*2*	171	*9*	–	–	–	–	188	*21*
Incised wound	326	*2*	336	–	331	*1*	350	*1*	–	–	–	–	–	–
Amputation	7	–	8	–	3	*1*	4	–	–	–	–	–	–	–
Poisoning	2	*1*	5	–	2	–	9	*1*	4	*1*	–	–	–	–
Snake bite	3	–	–	–	1	*1*	3	–	7	*1*	–	–	–	–
Asphyxia	–	–	–	–	1	*1*	1	*1*	–	–	–	–	–	–
Disease not specified	705	*8*	37	–	67	*1*	48	*2*	220	–	–	–	–	–
Punished	42	–	47	–	43	–	50	–	28	–	64	–	64	–

Note.—The words and figures printed in *italics* were printed in red in the original.

* Injuries of all kinds.

GAOLS OF THE BENGAL PRESIDENCY, 1859–63.

TABLE showing in detail the CAUSES of ADMISSIONS into HOSPITAL, and of DEATHS in HOSPITAL, in the GAOLS of the *Bengal* Presidency, for the Years 1859–63.

DISEASES.	1859.		1860.		1861.		1862.		1863.	
	Av. Strength 46,733 No. daily sick 2,473 Admissions - 62,218 *Deaths* - - *3,868*		Av. Strength 46,348 No. daily sick 2,666 Admissions - 69,058 *Deaths* - - *5,134*		Av. Strength 50,915 No. daily sick 2,458 Admissions - 66,667 *Deaths* - - *4,920*		Av. Strength 52,871 No. daily sick 2,463 Admissions - 71,028 *Deaths* - - *3,526*		Av. Strength 52,401 No. daily sick 2,555 Admissions - 71,659 *Deaths* - - *4,498*	
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*
Variola	74	*11*	95	*20*	50	*3*	83	*2*	66	*5*
Varicella	139	*1*	57	-	75	-	87	-	619	*2*
Morbilli	1	-	5	-	4	-	1	-	2	—
Scarlatina	-	-	-	-	-	-	-	-	1	—
Tonsilitis	47	*1*	30	-	28	-	22	-	44	*1*
Parotitis	143	-	102	*1*	94	*1*	124	-	123	*1*
Febris Intermittens	18,095	*203*	19,042	*267*	22,772	*409*	25,531	*216*	24,394	*291*
„ Remittens	1,677	*173*	3,147	*512*	3,719	*651*	4,226	*651*	3,086	*462*
„ Continua	1,019	*77*	3,004	*260*	679	*76*	1,099	*99*	1,733	*159*
Ophthalmia	1,516	*25*	1,419	*9*	1,017	*19*	1,045	*8*	1,153	*34*
Erysipelas	50	*1*	48	*3*	60	*8*	48	*5*	84	*8*
Erythema	16	*1*	29	-	4	-	11	-	4	—
Pyæmia	1	*1*	1	*1*	1	-	-	-	2	*2*
Gangræna et Phagedæna	20	*6*	19	*10*	75	*20*	49	*7*	144	*17*
Anthrax	46	*1*	47	*1*	50	*2*	38	-	68	*1*
Furunculus	7	-	9	-	92	-	145	-	103	—
Influenza	4	-	1	-	67	-	50	*1*	45	—
Dysenteria	7,253	*1,243*	7,626	*1,337*	6,904	*1,162*	6,911	*850*	7,953	*1,219*
Diarrhœa	5,785	*610*	6,171	*571*	6,091	*797*	6,246	*627*	6,835	*695*
Cholera	861	*401*	2,674	*1,004*	1,859	*774*	803	*292*	1,873	*751*
Rheumatismus	1,980	*37*	1,638	*23*	1,493	*21*	1,633	*14*	1,567	*17*
Syphilis Primaria	342	-	365	-	461	*7*	524	*1*	557	*3*
„ Secundaria	221	*3*	171	*2*	234	*4*	254	*6*	191	—
Iritis Syphilitica	-	-	-	-	6	-	1	-	2	—
Gonorrhœa	158	-	122	-	159	-	136	-	126	—
Bubo	135	*2*	148	-	122	*1*	93	-	162	—
Phymosis	26	-	46	-	43	-	48	*1*	32	—
Orchitis	5	-	15	*1*	40	-	47	*1*	51	—
Condyloma	2	-	4	-	1	-	4	-	4	—
Elephantiasis	21	*1*	14	-	9	*1*	9	-	18	—
Lepra	110	*8*	91	*13*	115	*12*	93	*3*	115	*12*
Hydrophobia	1	-	-	-	-	-	-	-	2	*2*
Scorbutus	524	*29*	376	*23*	418	*34*	327	*20*	274	*8*
Ebriositas	-	-	2	-	3	-	6	—	—	—
Bronchocele	8	-	10	-	5	-	8	-	3	—
Aphthæ	37	-	29	-	31	-	16	-	26	—
Porrigo	1	-	8	-	16	-	16	-	8	—
Scabies	1,324	*3*	1,167	-	395	-	1,540	-	1,713	*1*
Vermes	30	-	19	-	25	*1*	27	*1*	23	—
„ Tænia	4	-	4	-	9	-	5	-	6	—
„ Dracunculus	174	-	225	-	238	*3*	148	-	151	—
Scirrhoma	4	*1*	9	*5*	3	*3*	9	*3*	4	*1*
Lupus	-	-	-	-	-	-	1	-	1	—
Anæmia	72	*5*	155	*30*	141	*18*	167	*17*	191	*24*
Anasarca	208	*60*	175	*67*	202	*64*	227	*52*	225	*64*
Scrofula	29	*33*	33	*1*	53	*4*	36	*1*	53	*4*
Phthisis Pulmonary	208	*139*	189	*133*	136	*100*	159	*94*	167	*102*
Hæmoptysis	45	*4*	38	*4*	44	*3*	45	*5*	61	*7*
Abscessus Psoanus	-	-	-	-	-	-	2	*1*	—	—
Meningitis	2	*1*	4	*2*	7	*8*	1	*1*	15	*8*
Myelitis	-	-	-	-	1	*1*	-	-	1	*1*
Encephalitis	1	*1*	-	-	5	*1*	4	*4*	3	*3*
Apoplexia	40	*30*	50	*34*	47	*32*	41	*26*	29	*21*
Paralysis	56	*15*	57	*11*	43	*15*	65	*10*	35	*6*
Delirium Tremens	3	-	1	-	1	-	1	-	1	—
Hysteria	1	-	3	-	-	-	-	-	2	—
Chorea	2	-	2	-	-	-	1	—	—	—
Epilepsia	73	*3*	98	*9*	75	*4*	78	*7*	82	*6*
Tetanus	6	*5*	8	*7*	7	*6*	4	*4*	6	*5*
Mania	307	*14*	327	*20*	247	*8*	222	*6*	251	*13*
Dementia	4	*2*	6	*3*	27	*4*	35	*3*	16	—
Cephalæa	336	*1*	288	-	259	-	179	*1*	167	—
Neuralgia	149	-	85	*1*	109	-	86	-	84	—
Odontalgia	165	-	96	-	77	-	62	-	57	—
Otitis	209	-	195	*1*	184	-	206	-	184	—
Dysecœa	-	-	1	-	1	—	—	—	—	—
Amaurosis et Cæcitas	8	-	2	-	32	-	26	-	18	—
Pericarditis	13	*6*	6	*2*	18	*10*	10	*4*	11	*6*
Endocarditis	17	*7*	8	*6*	8	*6*	5	*6*	10	*9*
Palpitatio	-	-	3	-	1	—	—	—	—	—

Note.—The words and figures printed in *italics* were printed in red in the original.

* It is evident that in all cases the actual cause of death is not recorded, the death being returned in some instances under the heading of the disease which was originally the cause of admission into hospital.

GAOLS OF THE BENGAL PRESIDENCY, 1859-63—*continued.*

TABLE showing in detail the Causes of Admissions into Hospitals, and of Deaths in Hospital, &c.—*continued.*

DISEASES.	1859.		1860.		1861.		1862.		1863.	
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*
Aneurisma	1	*1*	-	-	-	-	-	-	1	*1*
Syncope	-	-	-	-	1	*1*	2	-	1	—
Varix	2	-	1	-	1	-	-	-	1	—
Phlebitis	5	*1*	1	-	7	*1*	4	-	5	—
Epistaxis	7	-	23	-	22	-	18	-	8	—
Laryngitis	20	*1*	10	*2*	18	-	24	*1*	8	*2*
Bronchitis	1,691	*65*	1,232	*66*	913	*70*	704	*53*	905	*60*
Pleuritis	345	*23*	356	*29*	301	*23*	277	*14*	306	*15*
Hydrothorax	-	-	-	-	7	*6*	6	*5*	6	*6*
Empyema	-	-	-	-	2	*2*	-	-	1	—
Pneumonia	446	*128*	386	*117*	347	*98*	299	*87*	357	*93*
Asthma	204	*22*	207	*17*	184	*17*	239	*22*	232	*20*
Gangræna Pulmonum	6	*6*	5	*4*	3	*3*	3	*3*	—	—
Ozæna	2	-	2	*1*	—	—	—	—	—	—
Stomatitis	10	-	7	-	6	-	11	-	25	*3*
Pharyngitis	-	-	-	-	-	-	-	-	1	—
Gastritis	24	*6*	14	*2*	21	*2*	12	-	16	*2*
Enteritis	19	*3*	15	*8*	7	*5*	17	*11*	19	*8*
Peritonitis	12	*6*	9	*7*	20	*13*	4	*3*	14	*8*
Obstipatio	1,194	-	900	*1*	582	*1*	597	-	565	—
Ileus	1	-	-	-	2	*2*	2	*2*	5	*5*
Hernia	23	*2*	19	*2*	20	-	28	*1*	31	*2*
Dyspepsia	942	*9*	1,126	*8*	902	*7*	757	*3*	650	*3*
Colica	1,891	*2*	1,742	*6*	1,654	*15*	1,487	*7*	1,517	*4*
Hæmatemesis	5	-	6	*4*	2	*1*	12	*3*	20	*3*
Melæna	-	-	-	-	2	*1*	-	-	1	*1*
Hæmorrhois	250	*1*	197	-	182	*3*	206	*4*	178	*5*
Fistula in Ano	15	*1*	23	-	25	*1*	28	-	29	—
Splenitis	246	*11*	232	*16*	264	*19*	357	*18*	342	*18*
Hepatitis	66	*16*	70	*22*	64	*15*	52	*9*	59	*7*
Icterus	116	*18*	141	*33*	65	*15*	65	*6*	65	*7*
Cirrhosis	-	-	-	-	-	-	2	-	1	*1*
Ascites	47	*28*	36	*23*	20	*12*	33	*22*	36	*14*
Nephritis	13	*1*	16	*5*	10	*1*	80	*21*	64	*25*
Albumenuria	-	-	-	-	-	-	1	-	1	—
Hæmaturia	11	*1*	1	*1*	12	*1*	16	-	14	*1*
Ischuria	24	-	23	*4*	18	-	25	*1*	13	*1*
Eneuresis	2	-	2	-	-	-	-	-	2	*1*
Diuresis et Diabetes	5	*1*	10	*1*	10	*1*	1	-	6	—
Cystitis	3	*1*	12	*3*	11	*4*	6	*1*	7	*3*
Calculus Vesicæ	3	-	6	-	4	*1*	3	-	10	—
Strictura Urethræ	33	-	30	*1*	27	-	27	*1*	22	*1*
Fistula in Perineo	6	-	3	-	-	-	-	-	2	*1*
Varicocele	2	-	-	-	-	-	-	-	1	—
Orchitis	56	-	55	-	43	-	44	-	43	*2*
Hydrocele	31	-	31	-	46	-	60	-	57	—
Synovitis	13	-	27	-	22	-	15	*1*	46	—
Contractura	3	-	1	-	*1	-	6	—	—	—
Periostitis	21	*2*	9	*1*	14	*1*	13	-	18	—
Necrosis	7	-	10	-	9	-	11	*1*	5	—
Caries	2	-	5	-	9	*1*	15	-	17	—
Skin Diseases	341	*1*	375	-	443	*1*	684	-	689	—
Phlegmon and Abscess	3,501	*18*	3,730	*21*	3,847	*19*	4,722	*18*	4,211	*20*
Whitlow	70	-	101	-	112	-	100	-	106	—
Ulcer	3,087	*39*	3,267	*31*	3,737	*40*	4,091	*30*	3,357	*23*
Tumour	40	*1*	26	-	21	-	26	*1*	21	*1*
Atrophy and Asthenia	990	*268*	2,472	*269*	684	*194*	658	*98*	600	*133*
Burning	*72	-	80	*1*	94	*2*	86	*3*	90	*1*
Dislocation	16	*1*	19	-	8	-	10	-	8	—
Subluxation	19	-	27	-	18	-	23	-	19	—
Fracture	124	*7*	187	*10*	208	*8*	178	*11*	162	*5*
Contusion	1,847	*10*	1,600	*12*	1,565	*11*	1,438	*9*	1,339	*1*
Concussion of Brain	3	*2*	2	*2*	3	*1*	1	*1*	3	*3*
Gun-shot Wound	25	*6*	18	-	6	-	6	-	5	*1*
Incised Wound	302	*22*	300	*9*	307	*13*	292	*4*	266	*12*
Amputation	6	—	—	—	—	—	—	—	—	—
Poisoning	3	*1*	3	*1*	8	*2*	5	-	9	*3*
Snake-bite	4	*1*	4	-	6	*2*	5	*1*	4	*1*
Disease not specified	38	-	27	-	28	*1*	8	—	—	—

Note.—The words and figures printed in *italics* were printed in red in the original.

GAOLS OF THE BENGAL PRESIDENCY, 1859-63—*continued.*

TABLE showing in detail the Causes of Admissions into Hospitals, and of Deaths in Hospital, &c.—*continued.*

RATIOS OF ADMISSIONS AND DEATHS.

	Admitted per Cent. of Average Strength.					*Died per 1,000 of Average Strength.*				
	1859.	1860.	1861.	1862.	1863.	*1859.*	*1860.*	*1861.*	*1862.*	*1863.*
Cholera	1·84	5·77	3·65	1·52	3·58	*8·58*	*21·66*	*15·21*	*5·52*	*14·33*
Small Pox	·16	·20	·10	·16	·13	*·24*	*·43*	*·06*	*·04*	*·10*
Fevers	44·49	54·36	53·36	58·36	53·75	*9·70*	*22·42*	*22·31*	*18·27*	*17·40*
Dysentery and Diarrhœa	27·90	29·77	25·52	24·88	28·22	*39·65*	*41·17*	*38·47*	*27·94*	*36·53*
Hepatitis	·14	·15	·12	·10	·11	*·34*	*·47*	*·30*	*·17*	*·13*
Spleen Diseases	·53	·50	·52	·68	·65	*·24*	*·35*	*·37*	*·34*	*·34*
Ophthalmia	3·24	3·06	2·00	1·98	2·20	—	—	—	—	—
Rheumatism	4·24	3·53	2·61	2·93	2·74	—	—	—	—	—
Scurvy	1·12	·81	·82	·62	·52	*·62*	*·49*	*·67*	*·38*	*·15*
Dropsy	·55	·45	·45	·50	·51	*1·88*	*1·94*	*1·59*	*1·49*	*1·60*
Atrophy and Anæmia	2·27	5·67	1·62	1·55	1·51	*5·84*	*6·45*	*4·16*	*2·14*	*3·65*
Phthisis Pulmonalis	·45	·41	·27	·30	·32	*2·97*	*2·96*	*2·02*	*1·87*	*2·08*
Apoplexy	·09	·11	·09	·08	·06	*·64*	*·74*	*·63*	*·49*	*·40*
Respiratory Diseases	5·80	4·74	3·47	2·93	3·45	*5·24*	*5·07*	*4·18*	*3·40*	*3·63*
Abscess and Ulcer	14·13	15·32	11·79	12·64	11·69	*1·22*	*1·12*	*1·16*	*·85*	*·82*
Injury	5·37	4·83	4·73	4·05	3·63	*1·07*	*·75*	*·77*	*·59*	*·52*
All other Causes	21·31	19·50	20·30	21·33	21·81	*4·54*	*4·79*	*4·75*	*3·26*	*4·16*
	133·63	149·18	131·42	134·61	136·88	*82·77*	*110·81*	*96·65*	*66·75*	*85·84*

Note.—The words and figures printed in *italics* were printed in red in the original.

EUROPEAN TROOPS, 1859.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Bengal* Presidency during the Year 1859, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	51,512	3,957	7·70	97		1	9	2	3	4	23	7	10	6	7	7	1	3	2	2	7	3
February	51,562	4,036	7·82	65		–	1	1	2	4	11	7	4	5	9	6	2	–	6	1	5	1
March	54,454	4,529	8·31	115		8	2	4	4	15	23	8	9	9	10	9	1	4	2	1	6	–
April	58,036	5,339	9·20	211		34	2	4	15	28	59	10	14	11	11	5	5	2	5	1	5	–
May	60,433	5,827	9·64	341		107	3	6	25	31	61	8	15	11	6	11	25	3	4	4	18	3
June	60,977	6,125	10·05	306		31	–	9	12	25	49	14	11	8	10	6	98	4	6	4	17	2
July	60,568	6,059	10·00	266		30	1	7	12	21	43	8	9	13	8	13	73	3	1	2	20	2
August	56,838	5,601	9·85	418		217	–	1	6	16	65	7	22	24	16	11	9	2	2	2	15	3
September	54,504	5,014	9·38	207		24	–	1	12	12	59	10	14	29	8	11	4	6	2	2	12	1
October	51,837	4,825	9·31	182		21	–	7	22	15	33	7	9	20	9	4	3	7	7	3	12	3
November	50,903	4,624	9·08	132		3	–	7	9	13	26	3	5	15	8	9	2	2	4	5	19	2
December	49,581	3,770	7·60	83		2	–	2	2	4	19	2	9	8	7	6	3	2	10	1	6	–
						478	18	51	124	188	471	91	131	159	109	98	226	38	51	28	142	20
						Died per 1,000 of Average Strength.																
	55,104	4,975	9·03	2,423	43·97	8·67	·32	·92	2·25	3·41	8·55	1·65	2·38	2·88	1·98	1·78	4·10	·69	·9	·51	2·57	·36

Deaths out of Hospital, 76. Died per 1,000 of Average Strength, 1·38.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	9	7	32	67	206	55	77	370	47	41	6	7	924	1·68	50·17
Small-pox	28	18	20	27	14	7	4	–	–	–	1	3	122	·22	14·75
Intermittent Fevers	702	587	975	1,736	1,771	2,003	1,839	1,272	1,243	2,135	2,417	1,654	18,334	79·21	·83
Remittent Fevers	72	114	257	453	593	692	732	480	607	1,119	793	306	6,218		
Continued Fevers	289	351	1,375	2,272	2,607	2,801	2,995	1,706	1,371	1,610	1,219	502	19,098		
Dysentery, Acute	267	272	404	576	637	504	592	647	581	413	307	231	5,431	11·87	8·60
„ Chronic	93	83	114	89	82	90	100	89	94	114	76	79	1,103		
Diarrhœa	452	436	705	882	916	798	1,048	1,204	870	542	495	419	8,767	15·91	1·50
Hepatitis, Acute	140	151	159	201	220	203	185	219	244	186	133	128	2,169	6·70	7·25
„ Chronic	152	136	121	89	164	128	151	150	124	126	90	96	1,527		
Ophthalmia	342	427	529	460	513	390	391	345	332	395	309	265	4,698	8·52	
Rheumatism	432	369	448	348	380	368	406	402	341	339	297	337	4,467	8·11	
Venereal Diseases	1,848	1,728	1,997	1,881	1,992	1,518	1,600	1,525	1,371	1,487	1,463	1,367	19,777	35·90	
Phthisis Pulmonalis	31	23	30	31	42	27	31	45	34	20	28	27	369	·67	26·55
Heat Apoplexy	3	10	6	13	55	194	138	31	16	5	3	4	478	·87	47·28
Delirium Tremens	44	28	38	41	52	51	44	46	57	49	32	27	509	·92	7·46
Epilepsy	30	25	27	17	35	22	28	28	29	28	35	24	328	·59	
Respiratory Diseases	379	375	427	387	450	317	358	348	291	323	434	351	4,440	8·05	1·14
Abscess and Ulcer	505	536	613	596	622	787	851	647	566	506	489	460	7,178	13·02	
Wounds and Accidents	631	512	615	444	504	445	364	332	370	393	424	446	5,480	9·94	
All other Diseases	797	789	970	945	1,066	1,232	1,360	1,102	989	734	699	707	11,390	20·67	·35
	7,246	6,977	9,862	11,555	12,921	12,632	13,294	10,988	9,577	10,565	9,750	7,440	122,807		
	Admitted per cent. of Average Strength in each Month.														
	14·06	13,53	18·11	19·91	21·38	20·71	21·95	19·33	17·57	20·38	19·15	15·01	222·85		

EUROPEAN TROOPS, 1859—*continued*.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in *Bengal* Proper during the Year 1859, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	4,689	273	5·83	3		1			1	1	2				1	1		2				
February	5,201	253	4·88	6																		
March	6,643	394	5·93	17		8			1	2	4							2				
April	5,278	310	5·88	11		2				1	3				1		1		1		2	
May	5,331	398	7·48	16		5	1		1	1	1		1				2				4	
June	5,537	481	8·69	13		4			1	1	2	3	1				1					
July	5,866	557	9·50	23		1			3	3	7	1	3		1		2				2	
August	7,232	589	8·14	123		95				3	14		7	1					1		2	
September	7,686	459	5·97	26		3		1	1		10	1	3	3		2					2	
October	6,549	432	6·61	35		15		1	4	1	3	1	5		1			1	1			2
November	4,448	369	8·30	14		1			1	3	2		1			2		1	1		2	
December	4,503	247	5·50	6							2		1		1				1		1	
						135	1	2	13	16	50	6	22	4	5	5	6	6	5	–	15	2
						Died per 1,000 of Average Strength.																
	5,747	397	6·91	293	50·98	23·49	·18	·35	2·26	2·78	8·70	1·04	3·83	·70	·87	·87	1·04	1·04	·87	–	2·61	·35

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	4	1	18	6	7	6	4	166	9	27	1	1	250	4·35	54·00
Small-pox	–	–	–	–	2	–	–	–	–	–	–	–	2	·03	50·00
Intermittent Fevers	29	14	27	17	42	209	37	66	85	182	169	107	984	60·83	·88
Remittent Fevers	4	16	11	7	166	136	84	56	4	10	3	1	498		
Continued Fevers	21	21	88	220	243	200	522	223	199	169	78	30	2,014		
Dysentery, Acute	18	14	47	28	23	42	79	67	83	51	28	27	507	9·79	9·95
„ Chronic	3	2	5	3	4	3	11	1	10	10	3	1	56		
Diarrhœa	50	46	78	102	71	56	146	209	105	87	42	22	1,014	17·66	2·16
Hepatitis, Acute	6	6	7	5	6	5	8	18	26	13	13	15	128	3·19	4·86
„ Chronic	3	5	3	3	3	3	1	8	8	5	2	13	57		
Ophthalmia	30	18	29	14	16	23	36	22	33	34	25	6	286	5·00	
Rheumatism	29	27	27	20	19	32	36	49	26	30	22	35	352	6·12	
Venereal Diseases	103	91	211	113	118	120	114	177	181	148	110	84	1,570	27·31	
Phthisis Pulmonalis	4	–	2	1	1	2	–	3	5	5	4	2	29	·50	17·24
Heat Apoplexy	–	–	–	1	4	1	3	1	3	–	–	–	13	·22	46·15
Delirium Tremens	21	12	18	14	23	9	7	13	6	6	7	4	140	2·43	4·28
Epilepsy	2	2	6	1	4	1	3	3	2	8	4	1	37	·64	
Respiratory Diseases	43	43	31	44	36	32	48	57	37	25	32	32	460	8·00	1·08
Abscess and Ulcer	60	58	76	37	81	81	99	69	68	45	33	32	739	12·85	
Wounds and Accidents	41	28	47	21	46	43	27	30	52	45	30	35	445	7·74	
All other Diseases	54	76	96	91	110	132	156	150	140	87	86	60	1,238	21·54	
	525	480	827	748	1,025	1,136	1,421	1,388	1,082	987	692	508	10,819		
	Admitted per cent. of Average Strength in each Month.														
	11·19	9·22	12·45	14·17	19·22	20·51	24·22	19·19	14·07	15·07	15·51	11·28	188·25		

EUROPEAN TROOPS, 1859—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Dinapore*, *Benares*, and *Oude* Districts, during the Year 1859, and the Prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	20,814	1,723	8·28	39	–	–	1	–	1	1	14	3	6	3	3	2	–	–	1	1	2	1
February	19,371	1,748	9·03	26	–	–	–	–	–	–	8	3	1	3	4	–	1	–	4	–	1	1
March	19,845	1,862	9·38	51	–	–	–	1	–	8	14	4	6	5	6	1	–	1	1	1	3	–
April	19,333	2,015	10·89	94	–	6	–	–	10	14	37	4	6	7	4	1	–	–	1	1	3	–
May	18,667	2,111	11·31	99	–	9	–	–	15	10	39	2	4	5	3	3	4	–	2	–	3	–
June	18,359	2,193	11·94	108	–	11	–	1	8	15	30	5	4	5	2	2	15	1	2	4	3	–
July	18,182	2,273	12·50	103	–	10	–	–	3	12	22	5	1	7	3	6	24	2	1	–	5	2
August	16,743	2,086	12·46	123	–	43	–	1	2	6	31	3	6	8	8	4	2	1	–	–	6	2
September	15,221	1,840	12·08	92	–	14	–	–	4	4	30	4	4	18	1	4	1	2	–	1	4	1
October	14,041	1,836	13·08	65	–	2	–	1	9	7	14	4	3	9	2	1	1	3	4	2	2	1
November	14,811	1,798	12·14	47	–	2	–	2	3	7	10	2	–	5	3	2	–	1	2	3	5	–
December	14,433	1,420	9·83	31	–	–	–	1	1	2	7	–	4	4	3	2	1	–	2	1	3	–
						97	1	7	56	86	256	39	45	79	42	28	49	11	20	14	40	8
						Died per 1,000 of Average Strength.																
	17,485	1,909	10·92	878	50·21	5·55	·05	·40	3·20	4·92	14·64	2·23	2·57	4·52	2·40	1·60	2·80	·63	1·15	·80	2·29	·46

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	1	1	8	14	14	25	23	73	24	6	5	3	197	1·12	49·24
Small-pox	6	1	4	3	–	2	1	–	–	–	–	–	17	·09	6·00
Intermittent fevers	167	157	220	348	318	291	307	213	112	343	720	631	3,827	80·00	1·06
Remittent fevers	40	64	85	277	253	362	490	218	200	577	529	241	3,336		
Continued fevers	132	151	590	736	644	650	1,031	639	520	746	687	287	6,813		
Dysentery, acute	159	149	219	357	354	307	317	324	222	148	111	87	2,754	18·13	9·30
Dysentery, chronic	27	27	35	27	36	37	58	49	31	45	25	20	417		
Diarrhœa	178	191	294	387	333	312	325	347	296	142	129	138	3,072	17·57	1·46
Hepatitis, acute	82	70	83	92	91	84	91	88	109	59	36	41	926	7·84	8·83
Hepatitis, chronic	48	41	34	26	53	37	52	44	27	31	29	23	445		
Ophthalmia	184	218	253	253	202	159	182	141	143	215	132	102	2,184	12·49	
Rheumatism	157	128	125	119	110	87	98	98	90	74	74	84	1,244	7·11	
Venereal diseases	891	776	822	794	783	589	684	660	541	578	562	492	8,172	46·73	
Phthisis pulmonalis	5	13	7	7	16	11	12	14	8	7	11	4	115	·65	24·35
Heat apoplexy	–	1	3	1	16	42	57	4	4	2	–	1	131	·75	37·40
Delirium tremens	9	6	9	13	7	23	8	12	14	16	5	7	129	·73	8·53
Epilepsy	8	9	9	5	12	4	3	7	7	4	10	5	83	·47	
Respiratory diseases	143	124	118	115	116	69	93	81	84	90	80	67	1,180	6·75	1·70
Abscess and ulcer	171	167	183	210	187	216	262	181	176	141	145	153	2,192	12·53	
Wounds and accidents	168	127	149	124	130	78	100	73	73	70	73	107	1,272	7·21	
All other diseases	264	264	310	308	308	290	340	283	306	219	207	191	3,290	18·81	
	2,840	2,685	3,560	4,216	3,983	3,675	4,534	3,549	2,987	3,513	3,570	2,684	41,796		
	Admitted per Cent. of Average Strength in each Month.														
	13·64	13·86	18·00	21·81	21·34	20·00	24·93	21·19	19·62	25·02	24·10	18·60	239·03		

EUROPEAN TROOPS, 1859—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Cawnpore, Meerut,* and *Rohilcund* Districts, during the Year 1859, and the Prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	11,875	903	7·61	29	–	–	1	1	1	1	6	3	2	1	1	2	1	1	1	–	5	2
February	12,838	944	7·35	13	–	–	–	–	1	–	2	3	3	1	1	3	1	–	1	1	1	–
March	11,688	1,160	9·92	19	–	–	–	1	2	1	2	3	2	3	2	1	–	–	–	–	2	–
April	12,713	1,395	10·97	60	–	26	1	2	2	3	13	4	4	3	1	–	1	–	–	–	–	–
May	13,794	1,493	10·82	169	–	91	2	2	7	13	12	3	8	5	–	–	16	2	2	1	3	2
June	14,070	1,427	10·14	84	–	14	–	4	1	3	7	1	4	1	5	–	30	2	2	–	9	1
July	13,776	1,364	9·91	65	–	13	–	3	2	2	6	–	3	2	–	2	27	–	–	–	5	–
August	11,000	1,084	9·86	124	–	78	–	–	2	1	12	3	6	3	5	4	4	1	–	1	4	–
September	10,849	1,062	9·79	46	–	6	–	–	3	6	11	2	3	3	3	3	1	1	–	–	4	–
October	11,243	1,007	8·96	45	–	3	–	2	5	5	10	–	1	6	3	1	2	2	–	–	5	–
November	10,192	1,018	9·98	22	–	–	–	1	–	1	7	1	–	4	–	2	2	–	–	–	3	1
December	9,261	811	8·76	14	–	1	–	–	1	–	2	1	–	3	1	2	1	1	1	–	–	–
						232	4	16	27	36	88	21	36	35	22	20	86	10	7	3	41	6
						Died per 1,000 of Average Strength.																
	11,941	1,139	9·54	690	57·78	19·43	·33	1·34	2·26	3·01	7·37	1·76	3·01	2·93	1·84	1·67	7·20	·83	·58	·25	3·43	·50

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	2	2	3	45	178	21	22	121	12	5	–	2	413	3·46	56·17
Small-pox	3	3	3	9	7	1	–	–	–	–	–	3	29	·24	13·80
Intermittent fevers	134	125	376	560	461	525	550	236	321	391	434	250	4,363		
Remittent fevers	19	17	122	93	61	58	54	25	71	123	64	28	735	80·43	·82
Continued fevers	82	98	482	672	544	722	570	270	317	421	207	121	4,506		
Dysentery, acute	57	77	81	128	136	88	104	142	175	125	77	58	1,248	12·80	7·13
Dysentery, chronic	17	24	22	31	15	26	12	19	32	41	25	17	281		
Diarrhœa	105	84	167	193	247	205	265	288	194	131	144	97	2,120	17·75	1·70
Hepatitis, acute	28	36	23	69	62	55	38	45	55	55	43	30	539	8·21	5·81
Hepatitis, chronic	32	42	31	30	36	34	39	49	39	58	27	25	442		
Ophthalmia	59	124	92	90	152	91	93	68	77	69	59	86	1,060	8·88	
Rheumatism	83	73	86	66	82	82	79	78	66	78	60	72	905	7·58	
Venereal diseases	469	434	432	396	423	343	294	216	255	384	294	318	4,258	35·66	
Phthisis pulmonalis	8	3	4	5	6	3	9	11	8	4	6	6	73	·61	27·40
Heat apoplexy	1	3	–	5	23	58	42	12	4	1	3	1	153	1·28	56·21
Delirium tremens	10	3	4	3	11	10	10	13	20	14	5	5	108	·90	9·26
Epilepsy	8	5	8	2	8	6	5	3	8	5	8	3	69	·58	
Respiratory diseases	72	68	87	89	113	80	72	81	53	70	96	83	964	8·07	·72
Abscess and ulcer	143	164	164	150	136	212	209	146	123	133	163	131	1,874	15·69	
Wounds and accidents	190	168	150	115	138	148	107	104	112	103	124	128	1,587	13·29	
All other diseases	209	215	237	219	303	368	340	257	213	181	160	166	2,868	24·02	·39
	1,731	1,768	2,574	2,970	3,142	3,136	2,914	2,184	2,155	2,392	1,999	1,680	28,595		
	Admitted per Cent. of Average Strength in each Month.														
	14·58	13·77	22·02	23·36	22·78	22·29	21·15	19·85	19·86	21·27	19·61	17·60	240·00		

EUROPEAN TROOPS, 1859—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Agra* District and in *Central India* during the Year 1859, and the Prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	1,222	84	6·91	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
February	1,819	74	4·07	2	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
March	2,751	191	7·00	5	–	–	–	–	–	3	1	–	1	–	–	–	–	–	–	–	–	–
April	3,139	242	7·71	14	–	1	–	–	2	6	1	–	2	–	–	–	1	–	1	–	–	–
May	4,562	330	7·24	13	–	–	1	–	–	1	3	1	–	–	1	–	3	1	–	–	2	–
June	4,509	377	8·38	16	2	–	1	–	–	–	2	1	1	–	1	–	4	1	1	–	1	1
July	4,295	408	9·51	25	5	1	2	–	–	2	2	–	1	1	–	–	10	–	–	–	1	–
August	4,832	431	9·00	17	–	–	–	2	2	3	2	–	2	5	1	1	–	–	1	–	–	–
September	4,395	494	11·25	19	1	–	–	3	3	–	6	1	1	–	1	–	2	1	2	1	–	–
October	4,390	502	11·45	23	1	–	1	2	–	–	4	2	–	4	1	1	–	1	1	1	4	–
November	5,761	457	7·94	24	–	–	3	2	2	–	6	–	3	4	2	–	–	–	1	–	1	–
December	5,446	379	7·00	14	–	–	–	–	–	–	5	1	2	1	1	–	1	–	1	–	2	–
						9	4	8	11	17	32	6	13	15	8	2	21	4	8	2	12	1
						Died per 1,000 of Average Strength.																
	3,927	331	8·43	173	44·05	2·30	1·02	2·03	2·80	4·33	8·15	1·52	3·31	3·82	2·03	·51	5·35	1·02	2·03	·51	3·05	·25

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	–	1	2	2	26	4	2	3	–	–	40	1·02	22·50
Small-pox	–	6	6	9	4	1	3	–	–	–	–	–	29	·74	14·00
Intermittent fevers	121	105	127	157	343	378	363	326	394	722	560	383	3,979		
Remittent fevers	–	–	–	9	9	4	9	140	286	385	182	33	1,057	153·65	·59
Continued fevers	1	1	82	87	113	112	236	73	96	66	105	26	998		
Dysentery, acute	3	2	10	10	25	23	29	64	63	50	60	31	370	10·69	9·05
Dysentery, chronic	–	1	2	1	2	2	3	3	9	5	10	12	50		
Diarrhœa	4	22	43	39	80	61	112	145	118	65	84	56	829	21·11	1·56
Hepatitis, acute	3	3	8	8	20	10	8	19	18	26	20	16	159	6·14	9·54
Hepatitis, chronic	–	4	3	4	10	8	8	4	8	7	10	16	82		
Ophthalmia	3	7	41	20	43	29	16	51	28	28	30	26	322	8·20	–
Rheumatism	7	7	14	8	18	12	30	21	22	25	24	23	211	5·37	–
Venereal diseases	35	63	104	86	109	129	92	110	90	80	131	110	1,199	30·53	–
Phthisis pulmonalis	–	–	–	–	–	2	2	4	2	2	–	2	14	·35	14·30
Heat apoplexy	–	–	–	2	7	9	17	8	3	1	–	1	48	1·22	43·75
Delirium tremens	–	1	–	–	2	2	6	3	5	3	3	3	28	·71	14·30
Epilepsy	2	–	–	2	3	1	5	–	2	2	1	5	23	·58	–
Respiratory diseases	3	8	38	36	48	30	35	23	20	27	72	64	404	10·29	1·98
Abscess and ulcer	7	14	55	29	44	38	75	34	29	39	30	45	439	11·18	–
Wounds and accidents	14	13	21	18	32	10	17	18	14	15	29	28	229	5·83	–
All other diseases	11	24	42	59	66	61	122	76	41	48	61	70	681	17·34	–
	214	281	596	585	1,040	924	1,214	1,126	1,250	1,599	1,412	950	11,191		
	Admitted per Cent. of Average Strength in each Month.														
	17·51	15·45	21·66	18·63	22·80	20·50	28·26	22·85	28·44	36·42	24·51	17·44	285·00		

EUROPEAN TROOPS, 1859—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Punjab*, during the Year 1859, and the Prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	Other Diseases.	Wounds and Accidents.
January -	12,912	684	5·30	21	–	–	6	1	1	1	2	1	2	2	2	2	–	–	–	1	–	–
February -	12,333	740	6·00	9	–	–	–	–	–	3	–	1	–	1	2	1	–	–	–	–	1	–
March -	13,527	721	5·33	15	–	–	2	2	1	1	2	1	–	1	–	3	1	1	–	–	–	–
April - -	17,573	1,112	6·33	23	–	–	–	2	1	2	4	–	2	–	4	3	2	1	2	–	–	–
May - -	18,079	1,377	7·62	35	–	–	–	3	2	6	5	1	2	1	1	6	–	–	–	2	5	1
June - -	18,502	1,564	8·45	82	–	–	–	3	2	6	6	3	1	2	2	4	48	–	1	–	4	–
July - -	18,449	1,345	7·29	43	–	–	–	2	3	2	5	–	1	3	2	5	10	1	–	2	7	–
August -	17,031	1,307	7·67	26	–	–	–	–	–	3	5	1	1	6	2	1	3	–	–	1	3	–
September -	16,353	1,082	6·62	24	–	–	–	–	1	2	2	2	3	5	3	2	–	2	–	–	2	–
October -	15,614	947	6·07	13	–	–	–	2	1	2	2	–	–	1	2	1	–	–	1	–	1	–
November -	15,691	864	5·51	18	–	–	–	1	–	–	1	–	1	2	2	2	–	–	–	2	7	–
December -	15,938	813	5·10	14	–	–	–	1	–	2	3	–	–	–	–	2	–	1	5	–	–	–
						–	8	17	12	30	37	10	13	24	22	32	64	6	9	8	30	1
						Died per 1,000 of Average Strength.																
	16,004	1,046	6·54	323	20·18	–	·50	1·06	·75	1·87	2·31	·62	·81	1·50	1·37	2·00	4·00	·37	·56	·50	1·87	·06

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera - - - -	1	2	3	–	3	1	1	1	–	–	–	–	12	·07	·00
Small-pox - - - -	19	7	7	6	1	3	–	–	–	–	1	–	44	·27	18·18
Intermittent fevers - -	240	179	216	650	604	591	578	428	326	493	529	276	5,110		
Remittent fevers - -	9	16	35	66	104	127	93	40	46	22	14	3	575	64·58	·57
Continued fevers - -	44	70	122	544	1,036	1,107	628	496	235	196	136	37	4,651		
Dysentery, acute - -	25	29	40	51	95	40	60	48	33	32	22	27	502		
Dysentery, chronic - -	6	5	15	13	20	12	12	11	9	8	13	8	132	3·97	7·41
Diarrhœa - - - -	106	88	110	154	177	162	198	214	150	113	91	98	1,661	10·38	·80
Hepatitis, acute - - -	20	33	35	24	40	48	38	49	35	33	21	24	400		
Hepatitis, chronic - -	15	9	21	20	59	38	51	44	32	23	14	7	333	4·58	6·28
Ophthalmia - - - -	46	51	70	81	95	85	62	62	44	44	58	43	741	4·63	
Rheumatism - - - -	128	117	162	130	144	151	158	151	135	132	112	116	1,636	10·22	
Venereal diseases - -	321	311	391	473	486	332	405	352	294	281	350	339	4,335	27·09	
Phthisis pulmonalis - -	2	6	7	17	16	6	4	11	8	1	1	3	82	·51	40·00
Heat apoplexy - - -	1	1	2	4	5	82	18	6	1	–	–	–	120	·75	53·33
Delirium tremens - -	2	2	6	7	6	7	11	4	12	9	10	8	84	·52	7·14
Epilepsy - - - -	7	6	1	5	8	10	12	15	10	9	10	7	100	·62	
Respiratory diseases - -	109	123	145	99	133	103	109	105	96	109	153	101	1,385	8·65	·65
Abscess and ulcer - -	111	123	127	167	168	235	203	211	169	146	116	94	1,870	11·05	
Wounds and accidents -	147	152	208	155	157	160	112	101	112	155	163	142	1,764	11·02	
All other diseases - -	133	153	220	250	258	369	386	330	273	191	171	194	2,928	18·23	1
	1,492	1,483	1,943	2,916	3,615	3,669	3,139	2,679	2,020	1,997	1,985	1,527	28,465		
	Admitted per Cent of Average Strength in each Month.														
	11·55	12·07	14·37	16·60	20·00	19·83	17·02	15·73	12·35	12·79	12·65	9·58	177·23		

EUROPEAN TROOPS, 1859—*continued.*

COMPARATIVE STATEMENT of the Ratios of SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the various Provinces of the *Bengal* Presidency during the Year 1859.

DISEASES.	BENGAL PROPER.			DINAPORE, BENARES, AND OUDE.			CAWNPORE AND MEERUT.			AGRA AND CENTRAL INDIA.			PUNJAB.			BENGAL PRESIDENCY.		
	Average Strength - 5,747 Daily Sick per Cent. of Strength - - 6·91 Admitted per Cent. of Strength - - 181·25 Died per 1,000 of Strength: A. From Cholera - 23·43 B. From all Causes 50·98			Average Strength - 17,485 Daily Sick per Cent. of Strength - - 10·92 Admitted per Cent. of Strength - - 239·03 Died per 1,000 of Strength: A. From Cholera - 5·55 B. From all Causes 50·21			Average Strength 11,941 Daily Sick per Cent. of Strength - - 9·54 Admitted per Cent. of Strength - - 240·00 Died per 1,000 of Strength: A. From Cholera - 19·43 B. From all Causes 57·78			Average Strength - 3,927 Daily Sick per Cent. of Strength - - 8·43 Admitted per Cent. of Strength - - 285·00 Died per 1,000 of Strength: A. From Cholera - 2·30 B. From all Causes 44·05			Average Strength - 16,004 Daily Sick per Cent. of Strength - - 6·54 Admitted per Cent. of Strength - - 177·23 Died per 1,000 of Strength: A. From Cholera - ·00 B. From all Causes 20·18			Average Strength - 55,104 Daily Sick per Cent. of Strength - - 9·03 Admitted per Cent. of Strength - - 222·85 Died per 1,000 of Strength: A. From Cholera - 8·67 B. From all Causes 43·97		
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.
Cholera	4·35	54·00	23·49	1·12	49·24	5·55	3·46	56·17	19·43	1·02	22·50	2·30	·07	–	–	1·68	50·17	8·67
Small-pox	·03	–	·18	·09	6·00	·05	·24	13·80	·33	·74	14·00	1·02	·27	18·18	·50	·22	14·75	·32
Fevers	60·83	·88	5·39	80·00	1·06	8·52	80·43	·82	6·61	153·65	·59	9·16	64·58	·57	3·68	79·21	·83	6·58
Dysentery	9·79	9·95	9·74	18·13	9·30	16·87	12·80	7·13	9·13	10·69	9·05	9·67	3·97	7·41	2·93	11·87	8·60	10·20
Diarrhœa	17·66	2·16	3·83	17·57	1·46	2·57	17·75	1·70	3·01	21·11	1·56	3·31	10·38	·80	·81	15·91	1·50	2·38
Hepatitis	3·19	4·86	1·57	7·84	8·83	6·92	8·21	5·81	4·77	6·14	9·54	5·85	4·58	6·28	2·87	6·70	7·25	4·86
Ophthalmia	5·00	–	–	12·49	–	–	8·88	–	–	8·20	–	–	4·63	–	–	8·52	–	–
Rheumatism	6·12	–	–	7·11	–	–	7·58	–	–	5·37	–	–	10·22	–	–	8·11	–	–
Venereal diseases	27·31	–	–	46·73	–	–	35·66	–	–	30·53	–	–	27·09	–	–	35·90	–	–
Phthisis pulmonalis	·50	17·24	·87	·65	24·35	1·60	·61	27·40	1·67	·35	14·30	·51	·51	40·00	2·00	·67	26·55	1·78
Heat apoplexy	·22	46·15	1·04	·75	37·40	2·80	1·28	56·21	7·20	1·22	43·75	5·35	·75	53·33	4·00	·87	47·28	4·10
Delirium tremens	2·43	4·28	1·04	·73	8·53	·63	·90	9·26	·83	·71	14·30	1·02	·52	7·14	·37	·92	7·46	·69
Epilepsy	·64	–	–	·47	–	–	·58	–	–	·58	–	–	·62	–	–	·59	–	–
Respiratory diseases	8·00	1·08	·87	6·75	1·70	1·15	8·07	·72	·58	10·29	1·98	2·03	8·65	·65	·56	8·05	1·14	·92
Abscess and ulcer	12·85	–	–	12·53	–	–	15·69	–	–	11·18	–	–	11·05	–	–	13·02	–	–
Wounds and accidents	7·74	–	–	7·21	–	–	13·29	–	–	5·83	–	–	11·02	–	–	9·94	–	–
All other diseases	21·54	·36	2·96	18·81	·34	3·55	24·02	·39	4·18	17·34	·48	3·81	18·23	·30	2·43	20·67	·35	3·44
	188·25	–	50·98	239·03	–	50·21	240·00	–	57·78	285·00	–	44·05	177·23	–	20·18	222·85	–	43·97

EUROPEAN TROOPS, 1859—*continued.*

TABLE showing the General Statistics of Sickness and Mortality in the Principal Military Stations of the *Bengal* Presidency.

STATIONS.	Period of Observation.	Average Strength during Period of Observation.	DAILY SICK PER CENT. OF AVERAGE STRENGTH IN EACH MONTH.											Daily Sick per Cent. of Average Strength for the Year.	Number of Admissions into Hospital.	Admitted per Cent. of Average Strength.	Number of Deaths.		Died per 1,000 of Average Strength.		
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				A. Cholera.	B. All other Causes.	A. Cholera.	B. All other Causes.	C. All Causes.
Fort William		1,311	5·40	3·86	5·59	6·14	6·90	7·07	6·76	6·46	6·92	5·34	10·57	6·33	6·56	2,151	164·07	9	25	6·87	19·07	25·94
Dum-Dum		1,611	4·20	5·04	4·99	6·11	5·65	8·73	15·39	12·04	5·21	8·63	7·31	6·13	7·36	3,601	223·52	77	60	47·80	37·24	85·04
Barrackpore		1,428	5·25	5·31	8·17	3·42	8·96	9·51	8·85	8·76	4·47	5·65	4·72	3·15	6·63	2,645	185·22	36	28	25·21	19·61	44·82
Berhampore		466	4·61	9·61	5·92	8·98	8·91	6·32	4·53	4·19	6·23	6·72	10·37	5·74	6·16	887	190·34	8	20	17·17	42·92	60·09
Hazareebaugh		370	3·90	5·06	3·33	8·39	12·06	12·12	12·20	11·59	4·37	10·74	12·15	8·24	9·04	1,220	329·73	1	12	2·70	32·43	35·13
Dinapore		1,518	8·05	9·29	12·82	10·17	10·03	13·13	11·94	13·27	13·85	16·24	13·30	12·62	11·53	3,935	259·22	8	87	5·27	57·31	62·58
Ghazeepore		790	12·64	17·13	13·71	13·80	15·05	11·37	9·34	13·67	14·16	17·16	17·96	17·14	14·43	2,015	255·07	9	32	11·39	40·51	51·19
Benares *		1,315	8·21	8·49	6·13	9·56	10·26	10·03	13·19	12·35	14·09	15·97	14·02	13·57	11·16	3,533	268·67	26	69	19·77	52·47	72·24
Azimghur		427	11·84	20·83	16·20	11·07	15·02	12·70	12·83	12·33	13·54	15·04	24·93	10·32	14·33	1,171	274·24	4	8	9·37	18·74	28·11
Goruckpore		670	–	9·41	9·39	9·79	12·19	10·02	11·39	13·95	13·14	13·73	6·51	9·51	9·93	1,477	220·45	–	30	–	–	44·78
Gondah		919	6·31	5·20	5·52	8·62	9·88	9·49	8·24	7·62	7·00	5·65	4·04	4·33	7·00	1,599	174·00	–	43	–	–	46·79
Fyzabad		1,342	11·95	11·59	9·44	9·89	5·21	9·23	12·19	9·68	9·49	9·14	7·13	6·24	8·99	2,617	195·00	3	72	2·23	53·65	55·88
Sultanpore		666	4·93	6·32	6·43	7·38	7·58	10·01	10·04	11·04	9·86	11·05	16·96	11·79	9·78	1,417	212·76	–	10	–	–	15·01
Roy Bareilly		1,011	10·40	9·36	10·00	13·74	10·81	10·62	8·24	7·62	8·37	10·26	9·10	7·81	9·74	2,237	221·27	1	39	1·00	38·57	39·57
Seetapore		947	3·96	8·60	10·57	12·84	13·85	9·98	10·61	10·00	8·09	9·33	7·62	5·29	9·63	1,914	202·11	–	28	–	–	29·57
Lucknow *		3,320	4·28	8·17	9·56	7·94	8·16	9·17	12·87	14·04	13·91	13·51	12·09	9·75	10·76	8,427	253·70	42	119	12·65	35·85	48·50
Allahabad *		2,504	4·62	5·00	9·18	14·86	11·31	8·88	7·82	6·54	6·44	8·26	8·34	6·89	8·19	6,647	265·45	129	135	51·52	53·91	105·43
Cawnpore		1,372	6·14	8·95	8·29	10·00	9·25	9·41	11·14	17·01	16·12	10·14	13·28	7·82	10·86	4,127	300·08	54	81	39·36	59·04	98·40
Futtehgurh		808	8·44	7·31	9·70	10·46	8·06	7·25	7·91	8·05	7·60	8·42	7·72	9·82	8·28	1,553	192·20	–	12	–	–	14·85
Bareilly		823	5·76	6·92	6·30	7·56	6·84	6·12	5·63	6·54	6·27	6·92	5·94	8·66	6·54	1,166	141·67	1	14	1·21	17·01	18·22
Moradabad		440	3·96	2·15	3·56	2·25	6·34	7·24	7·08	7·66	6·07	6·25	5·08	4·15	5·40	382	86·82	–	10	–	–	22·72
Shahjehanpore		688	4·85	4·56	8·48	5·02	9·15	8·06	8·46	7·46	6·00	6·37	4·86	5·74	6·54	780	113·37	1	14	1·45	20·35	21·80
Meerut		2,146	11·01	6·90	11·26	10·40	10·42	10·54	10·86	10·15	8·89	7·14	8·67	8·25	9·63	5,423	252·70	–	50	–	–	23·30
Muttra		405	1·65	4·95	6·70	8·94	10·54	11·30	8·90	9·48	9·66	6·48	6·19	5·31	7·88	815	201·23	–	6	–	–	14·81
Delhi		1,400	5·35	6·29	8·14	9·39	13·18	11·76	10·12	9·57	10·07	8·85	8·60	8·38	8·93	3,149	224·92	–	38	–	–	27·14
Agra		1,293	7·21	4·64	5·93	7·93	7·73	9·22	13·13	9·26	11·99	11·85	6·50	7·55	8·61	3,249	251·27	–	33	–	–	25·52
Gwalior and Morar		1,198	6·08	3·28	4·56	5·27	7·07	7·42	9·20	7·00	7·32	8·55	6·41	5·00	6·83	3,033	253·17	–	43	–	–	35·89
Umballa		1,581	4·69	7·57	8·14	7·89	8·97	8·13	7·67	7·53	7·77	7·33	6·48	5·13	7·20	2,624	165·97	–	23	–	–	14·54
Dugshaie	7 months, April to October	566	–	–	–	8·98	8·42	8·47	10·19	13·89	9·57	8·21	–	–	9·54	991	145·77	–	12	–	–	21·20
Subathoo	8 months, April to November	938	–	–	–	5·14	5·50	6·26	6·98	8·11	8·35	7·06	3·87	–	6·38	673	62·37	–	11	–	–	11·72
Jullundur		934	5·01	5·38	5·66	6·48	9·94	9·59	9·40	7·94	6·81	7·12	5·12	4·88	7·04	1,629	174·41	–	10	–	–	10·70
Ferozepore		1,070	4·05	6·75	3·17	5·44	5·85	7·31	7·11	7·33	6·92	4·42	3·36	3·54	5·46	1,345	125·70	–	15	–	–	14·02
Meean Meer		2,044	4·80	5·98	5·34	7·72	9·28	11·06	8·55	11·63	7·44	7·00	7·01	5·55	7·67	4,816	235·61	–	79	–	–	38·65
Umritsur		407	6·54	7·38	6·58	6·87	7·90	10·05	10·03	7·76	6·73	4·40	2·27	3·61	6·50	374	91·89	–	14	–	–	34·40
Mooltan	10 months, March to December	1,030	–	–	4·64	6·83	7·03	10·50	6·86	5·15	4·32	4·56	3·68	4·04	6·08	2,063	194·76	–	20	–	–	19·42
Dera Ismael Khan		221	7·96	7·00	6·75	3·88	2·67	2·33	4·03	3·25	5·25	·92	7·17	5·20	6·10	322	145·70	–	9	–	–	40·81
Sealkote		1,600	4·35	6·70	6·00	4·82	6·90	8·26	6·43	7·15	8·07	7·56	6·44	5·94	6·56	2,051	128·19	–	17	–	–	10·62
Jhelum	6 months, April to September	532	–	–	–	5·23	7·15	7·47	6·26	6·18	5·39	–	–	–	6·06	509	95·67	–	12	–	–	22·55
Rawul Pindee		1,467	6·76	5·14	5·86	5·63	6·52	6·17	5·19	5·09	3·86	4·07	2·92	3·20	4·90	1,980	134·97	–	11	–	–	7·50
Attock	9 months, January to September	199	2·64	3·07	3·42	5·36	7·17	11·95	7·75	2·87	4·33	–	–	–	5·35	329	165·33	–	7	–	–	35·18
Nowshera	9 months, March to December	771	–	–	–	3·40	4·75	5·41	5·50	6·32	4·03	3·74	12·53	17·74	6·71	1,133	147·00	–	11	–	–	14·26
Campbellpore		347	2·72	2·75	3·43	6·81	–	10·08	7·09	11·98	5·77	6·44	3·65	5·41	5·33	481	138·61	–	3	–	–	8·64
Peshawur		2,640	6·08	5·91	4·84	5·68	7·90	8·29	6·21	6·93	6·65	5·95	5·02	4·90	6·18	5,374	203·56	–	40	–	–	15·15

* Exclusive of General and Field Hospitals.

EUROPEAN TROOPS, 1859—*continued.*

TABLE showing the Ratio in which the PRINCIPAL DISEASES have contributed to make up the ADMISSION RATE of the Year, in the CHIEF MILITARY STATIONS of the *Bengal* Presidency.

STATIONS.	ADMITTED INTO HOSPITAL PER CENT. OF AVERAGE STRENGTH.												Admitted per Cent. of Average Strength from all Causes.
	Average Strength.	Cholera.	Heat Apoplexy.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Diseases of the Respiratory Organs.	All other Causes.	
Fort William	1,311	1·07	·30	56·98	7·25	15·48	3·20	6·41	4·35	33·79	6·94	28·30	164·07
Dum-Dum	1,611	8·07	·19	74·55	12·48	20·05	2·79	4·90	5·77	26·01	7·45	61·26	223·52
Barrackpore	1,428	5·53	·13	66·81	6·51	16·88	2·80	4·97	7·70	21·85	8·27	43·77	185·22
Berhampore	466	3·22	·64	28·33	11·80	35·19	4·72	2·36	4·93	12·88	17·17	69·10	190·34
Hazareebaugh	370	1·62	–	108·65	13·79	28·92	2·70	10·00	15·14	68·11	9·19	71·62	329·73
Dinapore	1,518	1·98	·33	70·81	29·78	16·34	15·94	5·20	8·82	60·47	7·44	42·09	259·22
Ghazeepore	790	1·65	–	125·06	16·08	11·01	2·66	3·04	6·58	57·85	3·67	27·47	255·07
Benares	1,315	3·50	2·81	109·28	11·10	21·22	6·69	7·60	6·92	45·86	9·51	44·18	268·67
Azimghur	427	1·64	·47	88·29	10·54	14·28	2·81	5·38	7·03	107·03	4·92	31·85	274·24
Goruckpore*	670	–	·45	59·55	42·54	4·18	12·54	11·34	3·43	48·66	5·52	32·24	220·45
Gondah	919	·11	·65	42·22	14·69	24·70	3·92	21·65	6·96	13·60	5·55	40·00	174·00
Fyzabad	1,342	·30	·75	76·45	17·21	11·85	5·22	14·75	7·75	16·09	6·11	38·52	195·00
Sultanpore	666	–	·15	117·27	4·80	10·66	3·60	10·36	1·05	22·52	5·56	36·79	212·76
Roy Bareilly	1,011	·20	·69	102·08	4·55	16·62	3·76	15·63	6·82	32·74	8·31	29·87	221·27
Lucknow	3,320	2·08	·90	82·89	18·10	22·26	8·61	15·51	5·27	51·09	4·55	42·35	253·70
Seetapore	947	·32	·21	61·88	17·53	13·62	9·93	17·63	5·17	33·89	6·65	35·28	202·11
Allahabad	2,504	9·50	2·32	139·54	14·09	22·92	6·47	6·19	3·43	16·25	4·96	39·78	265·45
Cawnpore	1,372	4·74	3·28	100·22	22·45	27·26	9·62	11·37	8·01	51·18	6·41	55 54	300·08
Futtehgurh	808	·12	·77	66·09	6·19	8·41	5·44	5·44	8·17	40·22	8·04	43·41	192·20
Shahjehanpore	688	·15	·15	18·17	4·94	6·39	4·94	14·68	2·62	29·94	4·36	27·03	113·37
Bareilly	823	·12	–	33·17	10·21	8·62	3·52	3·89	3·64	38·76	4·62	35·12	141·67
Moradabad	440	–	·45	28·63	5·68	4·55	2·96	6·82	·91	22·73	1·59	12·50	86·82
Meerut	2,146	·05	·70	56·43	11·69	22·46	12·02	5·27	12·30	34·81	13·51	83·46	252 70
Delhi	1,400	·21	·64	66·57	6·79	10·43	4·14	10·00	9·07	53·93	8·00	55·14	224·92
Muttra	405	–	·74	72·34	3·46	12·84	6·42	9·14	6·91	30·37	6·42	52·59	201·23
Agra	1,293	·39	1·78	115·39	7·42	15·24	5·95	12·14	5·80	37·66	17·25	32·25	251·27
Gwalior and Morar	1,198	–	1·17	140·32	9·18	16·03	5·76	4·01	3·42	25·46	3·75	44·07	253·17
Umballa	1,581	·12	·76	46·55	3·66	12·79	3·61	3·66	16·39	31·12	7·34	39·97	165·97
Dugshaie (7 months)	566	·35	·18	23·14	4·24	10·42	1·78	1·24	16·43	30·57	6·01	51·41	145·77
Subathoo (8 months)	938	–	·11	10·87	2·24	3·31	1·49	3·73	1·71	17·48	1·49	19·94	62·87
Jullundur	934	–	·43	50·96	2·14	12·31	6·00	3·00	8·03	30·73	10·71	50·10	174·41
Ferozepore	1,070	–	·75	36·82	3·08	3·18	1·31	2·71	13·92	28·51	4·39	31·03	125·70
Meean Meer	2,044	·05	1·86	96·92	3·72	12·13	4·71	8·46	7·19	40·46	7·22	52·79	235·61
Umritsur	407	·25	·25	41·77	2·95	2·70	3·68	8·84	·25	21·87	1·95	7·37	91·89
Mooltan (10 months)	1,030	·10	1·55	125·53	3·40	5·05	1·75	3·20	2·91	13·01	6·51	31·75	194·76
Sealkote	1,600	–	·25	24·37	1·25	6·50	2·38	5·94	14·81	28·00	10·81	33·88	128·39
Rawul Pindee	1,467	·07	·20	38·11	3·82	9·81	4·50	2·86	12·89	19·15	12·00	31·56	134·97
Nowshera (9 months)	771	·13	·92	89·75	1·69	12·97	1·95	2·34	4·02	11·15	4·54	17·54	147·00
Peshawur	2,640	–	·46	85·64	5·00	13·22	5·79	3·45	6·93	21·25	12·24	49·58	203·56

* The ratio for dysentery is the equivalent of 285 admissions recorded during the year.

EUROPEAN TROOPS, 1859—*continued.*

TABLE showing the PREVALENCE of SMALL-POX in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the Period of Occupation.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												TOTAL Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Presidency hospitals	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Fort William	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dum-Dum	1,611	-	-	-	-	2	-	-	-	-	-	-	-	2	-	1	-
Barrackpore	1,428	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chinsurah depôt	425	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Raneegunge depôt	506	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Berhampore	466	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5,747	-	-	-	-	2	-	-	-	-	-	-	-	2	·03	1	·18
Darjeeling depôt (9 months)	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hazareebaugh	370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dinapore	1,518	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shahabad district	815	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-
Sasseram	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazeepore	790	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benares hospitals	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benares	1,315	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-	-
Azimghur	427	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goruckpore	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goruckpore district	930	-	-	-	-	-	1	1	-	-	-	-	-	2	-	-	-
Oude district	1,905	2	-	1	-	-	-	-	-	-	-	-	-	3	-	-	-
Gondah	919	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fyzabad	1,342	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sultanpore	666	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rae Bareilly	1,011	1	-	-	1	-	-	-	-	-	-	-	-	2	-	-	-
Seetapore	947	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lucknow	3,320	3	1	3	-	-	-	-	-	-	-	-	-	7	-	1	-
	17,485	6	1	4	3	-	2	1	-	-	-	-	-	17	·09	1	·05
Allahabad	2,504	-	-	1	6	-	-	-	-	-	-	-	2	9	-	1	-
Cawnpore	1,372	1	2	-	3	2	-	-	-	-	-	-	-	8	-	-	-
Allahabad and Cawnpore general hospitals	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Futtehgurh	808	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calpee, Oraie, and other detachment stations	737	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bareilly	823	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moradabad	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shahjehanpore	688	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Meerut	2,146	-	-	1	-	-	-	-	-	-	-	-	-	1	-	1	-
Allyghur	216	-	-	-	-	1	-	-	-	-	-	-	-	1	-	1	-
Muttra	405	-	1	1	-	2	1	-	-	-	-	-	1	6	-	-	-
Delhi	1,400	2	-	-	-	2	-	-	-	-	-	-	-	4	-	2	-
Roorkee	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Landour depôt (8 months)	106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nynee Tal depôt (10 months)	332	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11,941	3	3	3	9	7	1	-	-	-	-	-	3	29	·24	4	·33
Banda district	838	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-
Agra	1,293	-	3	6	4	4	1	2	-	-	-	-	-	20	-	2	-
Gwalior and Morar	1,198	-	3	-	4	-	-	1	-	-	-	-	-	8	-	2	-
Gwalior district	598	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3,927	-	6	6	9	4	1	3	-	-	-	-	-	29	·74	4	1·02
Umballa	1,581	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-
Dugshaie (7 months)	566	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-
Subathoo (8 months)	938	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kussowlie depôt (8 months)	202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phillour	139	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jullundur	934	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-
Ferozepore	1,070	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Meean Meer	2,044	7	3	5	4	1	-	-	-	-	-	-	-	20	-	3	-
Lahore citadel	170	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-
Umritsur	407	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Govindghur	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mooltan (10 months)	1,030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dera Ismael Khan	221	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Kangra	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sealkote	1,600	-	1	-	1	-	-	-	-	-	-	-	-	2	-	-	-
Jhelum (6 months)	532	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rawul Pindee	1,467	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-
Attock (9 months)	199	1	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-
Nowshera (9 months)	771	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Campbellpore	347	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peshawur	2,640	10	1	2	-	-	-	-	-	-	-	-	-	13	-	4	-
Murree depôt (6 months)	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16,004	19	7	7	6	1	3	-	-	-	-	1	-	44	·27	8	·50
BENGAL PRESIDENCY	55,104	28	18	20	27	14	7	4	-	-	-	1	3	122	·22	18	·32

EUROPEAN TROOPS, 1859—*continued.*

TABLE showing the PREVALENCE of CHOLERA in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the Period of Occupation.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Presidency hospitals	1	1	–	1	2	–	1	5	–	–	–	1	12	–	5	–
Fort William	1,311	1	–	–	2	5	1	–	2	2	–	–	1	14	–	9	–
Dum-Dum	1,611	–	–	–	–	1	2	–	113	1	13	–	–	130	–	77	–
Barrackpore	1,428	–	1	8	1	–	2	4	50	2	10	1	–	79	–	36	–
Chinsurah depôt	425	1	–	–	–	1	1	–	–	4	2	–	–	9	–	3	–
Raneegunge depôt	506	2	–	–	–	–	–	–	1	–	–	–	–	3	–	2	–
Berhampore	466	–	–	10	3	–	–	–	–	–	2	–	–	15	–	8	–
	5,747	4	1	18	6	7	6	4	166	9	27	1	1	250	4·35	135	23·49
Darjeeling depôt (nine months)	108	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hazareebaugh	370	–	–	1	5	–	–	–	–	–	–	–	–	6	–	1	–
Dinapore	1,518	1	1	2	1	2	9	3	7	–	–	3	1	30	–	8	–
Shahabad district	815	–	–	–	–	–	1	–	–	–	–	–	1	2	–	–	–
Sasseram	350	–	–	–	1	–	–	–	–	–	–	–	1	2	–	1	–
Ghazeepore	790	–	–	–	1	3	3	5	1	–	–	–	–	13	–	9	–
Benares hospitals	95	–	–	–	–	1	–	–	1	–	–	–	–	2	–	2	–
Benares	1,315	–	–	–	1	3	11	9	18	1	2	1	–	46	–	26	–
Azimghur	427	–	–	–	–	3	–	–	1	–	2	1	–	7	–	4	–
Goruckpore	670	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Goruckpore district	930	–	–	1	–	1	–	–	–	–	–	–	–	2	–	–	–
Oude district	1,905	–	–	1	–	1	–	–	–	–	–	–	–	2	–	–	–
Gondah	919	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–
Fyzabad	1,342	–	–	–	–	–	–	3	–	1	–	–	–	4	–	3	–
Sultanpore	666	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rae Bareilly	1,011	–	–	–	1	–	–	–	–	–	1	–	–	2	–	1	–
Seetapore	947	–	–	2	–	–	–	–	1	–	–	–	–	3	–	–	–
Lucknow	3,320	–	–	1	3	–	1	3	44	22	1	–	–	75	–	42	–
	17,485	1	1	8	14	14	25	23	73	24	6	5	3	197	1·12	97	5·55
Allahabad	2,504	1	–	–	38	111	13	18	52	1	3	–	1	238	–	129	–
Cawnpore	1,372	–	–	–	–	12	1	2	44	4	2	–	–	65	–	54	–
Allahabad and Cawnpore general hospitals	–	1	1	2	7	54	6	2	24	5	–	–	1	103	–	47	–
Futtehgurh	808	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–
Calpee, Oraie, and other detachment stations	737	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bareilly	823	–	–	–	–	1	–	–	–	–	–	–	–	1	–	1	–
Moradabad	440	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Shahjehanpore	688	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	–
Meerut	2,146	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–
Allyghur	216	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Muttra	405	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Delhi	1,400	–	1	1	–	–	–	–	–	1	–	–	–	3	–	–	–
Roorkee	37	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Landour depôt (8 months)	106	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nynee Tal depôt (10 months)	322	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	11,941	2	2	3	45	178	21	22	121	12	5	–	2	413	3·46	232	19·43
Banda district *	838	–	–	–	–	1	2	26	1	2	2	–	–	34	–	9	–
Agra	1,293	–	–	–	1	1	–	–	3	–	–	–	–	5	–	–	–
Gwalior and Morar	1,198	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Gwalior district	598	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–
	3,927	–	–	–	1	2	2	26	4	2	3	–	–	40	1·02	9	2·30
Umballa	1,581	–	–	2	–	–	–	–	–	–	–	–	–	2	–	–	–
Dugshaie (7 months)	566	–	–	–	–	1	–	1	–	–	–	–	–	2	–	–	–
Subathoo (8 months)	938	–	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Kussowlie depôt (8 months)	202	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phillour	139	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur	934	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ferozepore	1,070	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meean Meer	2,044	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Lahore citadel	170	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Umritsur	407	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–
Govindghur	102	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mooltan (10 months)	1,030	–	1	1	–	–	–	–	–	–	–	–	–	2	–	–	–
Dera Ismael Khan	221	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kangra	83	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–
Sealkote	1,600	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhelum (6 months)	532	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawul Pindee	1,467	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–
Attock (9 months)	199	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowshera (9 months)	771	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–
Campbellpore	347	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peshawur	2,640	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Murree depôt (6 months)	270	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	16,004	1	2	3	–	3	1	1	1	–	–	–	–	12	0·7	–	–
BENGAL PRESIDENCY	55,104	9	7	32	67	206	55	77	370	47	41	6	7	924	1·68	478	8·67

* The Banda District should have been included in the Eastern Province of the Presidency.

EUROPEAN TROOPS, 1859—*continued.*

TABLE showing the MORTALITY in each STATION, the CAUSES of DEATH, and the Ratio of DEATHS to STRENGTH.

STATIONS.	Average Strength for the Period of Occupation.	CAUSES OF DEATHS IN HOSPITAL.																	Number of Deaths.	DIED PER 1,000 OF AVERAGE STRENGTH.		
		Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.		A. Cholera.	B. Other Causes.	C. All Causes.
Presidency hospitals	–	5	–	1	5	3	8	9	2	2	10	11	–	1	2	1	4	2	66	–	–	–
Fort William	1,311	9	–	1	–	4	6	–	3	1	–	2	2	1	–	–	5	–	34	6·87	19·07	25·94
Dum-Dum	1,611	77	1	1	8	5	26	5	3	3	3	1	2	–	–	–	1	1	137	47·80	37·24	85·04
Barrackpore	1,428	36	–	–	2	3	4	–	12	–	–	1	1	1	–	–	4	–	64	25·21	19·61	44·82
Chinsurah depôt	425	3	–	–	2	1	6	–	1	–	2	–	–	1	–	–	–	1	17	–	–	–
Raneegunge depôt	506	2	–	–	–	–	3	–	1	–	–	1	–	2	2	–	2	–	13	–	–	–
Berhampore	466	8	–	–	1	3	5	1	2	–	–	–	1	1	3	–	3	–	28	17·17	42·92	60·09
	5,747	135	1	2	13	16	50	6	22	4	5	5	6	6	5	–	15	2	293	23·49	27·49	50·98
Darjeeling depôt (9 months)	108	–	–	–	–	–	1	–	1	1	1	–	–	–	2	–	–	–	6	–	–	–
Hazareebaugh	370	1	–	1	1	3	1	1	1	–	–	–	1	1	2	–	–	–	13	2·70	32·43	35·13
Dinapore	1,518	8	–	–	10	8	25	5	–	15	12	2	3	1	–	3	3	–	95	5·27	57·31	62·58
Shahabad district	815	–	–	–	2	2	11	1	10	4	5	1	1	1	–	1	2	–	41	–	–	50·30
Sasseram	350	1	–	1	2	–	9	2	1	–	1	1	3	–	–	–	–	–	21	2·86	57·14	60·00
Ghazeepore	790	9	–	–	3	6	11	3	–	2	–	2	–	3	1	–	1	–	41	11·39	40·51	51·19
Benares hospital	95	2	–	–	–	1	9	1	1	1	–	1	1	–	1	–	–	–	18	–	–	–
Benares	1,315	26	–	1	5	9	17	3	10	5	1	5	8	–	1	1	3	–	95	19·77	52·47	72·24
Azimghur	427	4	–	–	1	–	1	2	–	–	–	1	2	–	–	–	1	–	12	9·37	18·74	28·11
Goruckpore	670	–	–	–	2	3	15	1	–	4	1	–	–	–	–	1	3	–	30	–	–	44·78
Goruckpore district	930	–	–	1	3	2	7	–	3	7	2	2	1	1	–	1	4	1	35	–	–	37·63
Oude district	1,905	–	–	–	10	4	20	2	2	5	–	2	5	–	3	1	4	1	59	–	–	–
Gondah	919	–	–	–	–	11	16	–	2	1	–	1	5	2	–	1	3	1	43	–	–	46·79
Fyzabad	1,342	3	–	–	4	10	31	2	3	6	2	3	4	–	1	3	3	–	75	2·23	53·65	55·88
Sultanpore	666	–	–	–	1	–	5	–	–	3	–	–	–	–	1	–	–	–	10	–	–	15·01
Rae Bareilly	1,011	1	–	1	1	9	11	–	2	7	–	–	3	–	–	1	2	2	40	1·00	38·57	39·57
Seetapore	947	–	–	–	3	5	7	–	1	4	2	–	–	–	3	–	2	1	28	–	–	29·57
Lucknow	3,320	42	1	2	8	13	59	16	8	14	15	7	12	2	5	1	9	2	216	12·65	35·85	48·50
	17,485	97	1	7	56	86	256	39	45	79	42	28	49	11	20	14	40	8	878	5·55	44·66	50·21
Allahabad	2,504	129	1	10	7	13	29	2	14	7	3	4	32	3	1	–	7	2	264	51·52	53·91	105·43
Cawnpore	1,372	54	–	2	–	6	20	4	5	5	4	–	22	1	–	–	12	–	135	39·36	59·04	98·40
Allahabad and Cawnpore general hospitals	–	47	–	–	11	6	5	4	5	6	4	4	5	–	–	–	7	–	104	–	–	–
Futtehgurh	808	–	–	–	–	–	2	2	–	–	–	1	5	2	–	–	–	–	12	–	–	14·85
Calpee, Oraie, and other detachment stations	737	–	–	–	–	–	4	–	3	–	–	1	1	–	1	1	–	1	12	–	–	16·28
Bareilly	823	1	–	–	1	–	2	2	1	1	–	3	–	1	–	1	2	–	15	1·21	17·01	18·22
Moradabad	440	–	–	1	1	2	1	1	1	1	–	–	2	–	–	–	–	–	10	–	–	22·72
Shahjehanpore	688	1	–	–	1	1	–	–	–	7	4	1	–	–	–	–	–	–	15	1·45	20·35	21·80
Meerut	2,146	–	–	1	4	3	6	2	3	4	3	4	7	–	4	1	6	2	50	–	–	23·30
Allyghur	216	–	1	–	–	3	5	1	–	1	–	–	1	–	–	–	1	–	13	–	–	60·18
Muttra	405	–	–	2	1	–	2	–	–	–	–	–	1	–	–	–	–	–	6	–	–	14·81
Delhi	1,400	–	2	–	–	1	10	1	1	3	3	–	9	3	–	–	4	1	38	–	–	27·14
Roorkee	37	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–
Landour depôt (8 months)	106	–	–	–	1	–	1	–	–	–	1	2	–	–	–	–	1	–	6	–	–	–
Nynee Tall depôt (10 mths.)	332	–	–	–	–	1	1	2	3	–	–	–	–	–	1	–	1	–	9	–	–	–
	11,941	232	4	16	27	36	88	21	36	35	22	20	86	10	7	3	41	6	690	19·43	88·35	57·78
Banda district	838	9	–	1	2	13	11	–	9	4	1	–	5	2	3	–	5	1	66	10·74	68·01	78·75
Agra	1,293	–	2	3	2	1	6	–	1	2	3	–	8	1	2	–	2	–	33	–	–	25·52
Gwalior and Morar	1,198	–	2	2	4	2	5	2	2	8	2	2	7	1	–	1	3	–	43	–	–	35·89
Gwalior district	598	–	–	2	3	1	10	4	1	1	2	–	1	–	3	1	2	–	31	–	–	30·66
	3,927	9	4	8	11	17	32	6	13	15	8	2	21	4	8	2	12	1	173	2·30	41·75	44·05
Umballa	1,581	–	–	–	3	–	3	1	1	2	1	1	4	1	–	1	5	–	23	–	–	14·54
Dugshaie (7 months)	566	–	–	1	–	–	3	2	–	1	–	3	–	–	1	–	1	–	12	–	–	21·20
Subathoo (8 months)	938	–	–	–	2	–	2	–	2	1	1	–	1	–	–	–	1	1	11	–	–	11·72
Kussowlie depôt (8 months)	202	–	–	–	–	1	–	–	–	–	2	–	–	–	–	–	2	–	5	–	–	–
Phillour	139	–	–	–	–	–	1	–	–	1	–	–	–	–	–	–	1	–	3	–	–	11·58
Jullundur	934	–	–	–	–	1	1	–	1	1	–	3	2	–	1	–	–	–	10	–	–	10·70
Ferozepore	1,070	–	–	2	–	1	1	–	–	–	1	2	4	–	1	1	2	–	15	–	–	14·02
Meean Meer	2,044	–	3	7	1	7	10	3	2	5	5	6	20	2	2	1	5	–	79	–	–	38·65
Lahore citadel	170	–	–	–	–	–	–	1	–	2	1	–	4	–	–	–	–	–	8	–	–	47·06
Umritsur	407	–	–	2	2	1	2	–	–	4	–	–	1	–	1	–	1	–	14	–	–	34·40
Govindghur	102	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	10·00
Mooltan (10 months)	1,030	–	–	1	2	1	1	–	–	1	2	2	10	–	–	–	–	–	20	–	–	19·42
Dera Ismael Khan	221	–	–	–	–	4	1	–	–	1	–	1	1	–	–	–	1	–	9	–	–	40·81
Kangra	83	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	12·00
Sealkote	1,600	–	–	–	1	2	–	–	1	1	2	1	3	–	2	–	4	–	17	–	–	10·62
Jhelum (6 months)	532	–	–	–	–	–	6	–	–	2	1	–	–	1	–	–	2	–	12	–	–	22·55
Rawul Pindee	1,467	–	–	–	–	2	1	1	1	1	2	–	1	–	1	1	–	–	11	–	–	7·50
Attock (9 months)	199	–	1	–	–	1	1	–	–	–	–	–	3	–	–	1	–	–	7	–	–	35·18
Nowshera (9 months)	771	–	–	2	–	1	–	1	–	–	1	1	3	–	–	1	1	–	11	–	–	14·26
Campbellpore	347	–	–	–	–	1	–	–	–	–	–	1	–	1	–	–	–	–	3	–	–	8·64
Peshawur	2,640	–	4	1	–	7	3	–	2	1	–	11	7	–	–	1	3	–	40	–	–	15·15
Murree depôt (6 months)	270	–	–	1	–	–	–	1	3	–	3	–	–	1	–	1	1	–	11	–	–	–
	16,004	–	8	17	12	30	37	10	13	24	22	32	64	6	9	8	30	1	323	–	20·18	20·18
BENGAL PRESIDENCY	55,104	478	18	51	124	188	471	91	131	159	109	98	226	38	51	28	142	20	2,423	8·67	35·30	43·97

EUROPEAN TROOPS, 1859—*continued.*

TABLE showing the CAUSES of DEATH and INVALIDING.

TOTAL LOSS TO THE SERVICE BY DEATH AND INVALIDING, 3,866. PER 1,000 OF AVERAGE STRENGTH, 70·15.

NUMBER OF MEN LOST TO THE SERVICE BY DEATH, 2,499.

CAUSES OF DEATH.	Died in Hospital.	Died out of Hospital.	Died per 1,000 of Strength.
Variola	18	–	·32
Tonsillitis	1	–	–
Febris intermittens	51	–	·92
„ remittens	124	–	2·25
„ continua	188	–	3·41
Erysipelas	5	–	–
Anthrax	1	–	–
Phlegmon	3	–	–
Dysenteria acuta	471	–	8·55
„ chronica	91	–	1·65
Diarrhœa	131	–	2·38
Cholera	478	2	8·67
Rheumatismus	5	–	–
Syphilis	7	–	–
Strictura urethræ	3	–	–
Scorbutus	1	–	–
Ebriositas	2	1	–
Anœmia	1	–	–
Anasarca	7	–	–
Scrofula	1	–	–
Phthisis pulmonalis	98	–	1·78
Hæmoptysis	4	–	–
Meningitis	1	–	–
Encephalitis	2	–	–
Apoplexia	226	18	4·43
Paralysis	2	–	–
Phrenitis	3	–	–
Delirium tremens	38	–	·69
Mania	1	–	–
Amentia	2	–	–
Melancholia	1	–	–
Epilepsia	4	–	–
Cephalœa	1	–	–
Tetanus	1	–	–
Hydrophobia	1	–	–
Otitis	1	–	–
Pericarditis	2	–	
Morbus cordis	20	1	·38
Aneurisma	6	2	–
Hæmorrhagia	1	–	
Dyspnœa	1	–	
Laryngitis	1	–	
Catarrhus	12	–	
Bronchitis	12	–	·96
Pneumonia	19	–	
Pleuritis	6	–	
Hydrothorax	1	–	
Empyema	1	–	
Gastritis	1	–	–
Enteritis	9	–	–
Peritonitis	23	–	–
Ileus	2	–	–
Hernia	1	–	–
Dyspepsia	3	–	–
Hæmatemesis	2	–	–
Splenitis	2	–	–
Hepatitis acuta	159	–	2·88
„ chronica	109	1	1·98
Icterus	8	–	–
Ascites	9	–	–
Nephritis	1	–	–
Albumenuria	1	–	–
Cystitis	2	–	–
Periostitis	1	–	–
Necrosis	1	–	–
Abscessus	3	–	–
Cachexia	1	–	–
Debilitas	3	–	–
Accident	–	9	
Ambustio	2	–	
Ictus fulmenis	–	1	
Submersio	–	23	
Suffocatio	–	1	
Fractura	6	–	
Contusio	3	–	1·13
Concussio cerebri	2	–	
Compressio cerebri	2	–	
Vulnus sclopetarium	4	–	
Killed in action	–	4	
Suicide	1	4	
Found dead; cause of death unknown	–	9	
Ratio per 1,000 for deaths from causes not specially calculated	–	–	2·97
	2,423	76	45·35

NUMBER OF MEN LOST TO THE SERVICE BY INVALIDING, 1,367.*

CAUSES OF INVALIDING.	Number Invalided.	Invalided per 1,000 of Strength.
Febris intermittens	40	
„ remittens	34	1·92
„ continua	32	
Morbi oculorum	81	1·47
Dysenteria	111	2·01
Diarrhœa	17	·31
Cholera	2	–
Rheumatismus	209	3·79
Lumbago	2	–
Syphilis	27	
Orchitis	2	·71
Strictura urethræ	9	
Rupia	1	
Anasarca	1	–
Scrofula	16	
Phthisis pulmonalis	58	1·51
Hæmoptysis	6	
Morbus coxæ	3	
Meningitis	1	–
Apoplexia	2	–
Insolatio	3	–
Paralysis	14	–
Paraplegia	1	–
Delirium tremens	1	–
Mania	13	–
Dementia	21	–
Melancholia	3	–
Epilepsia	18	·33
Cephalœa	7	–
Sciatica	1	–
Otitis	4	–
Dysecœa	4	–
Vertigo	1	–
Pericarditis	1	
Morbus cordis	57	1·56
Palpitatio	24	
Aneurisma	4	
Varix	7	–
Angina pectoris	1	–
Bronchitis	51	
Pleuritis	2	
Pneumonia	1	1·07
Asthma	3	
Dyspnœa	2	
Gastritis	3	–
Hernia	4	–
Dyspepsia	17	–
Hæmorrhois	3	–
Fistula in ano	2	–
Splenitis	12	–
Hepatitis	186	3·37
Ascites	1	–
Nephritis	4	–
Ischuria	1	–
Varicocele	1	–
Arthritis	1	–
Ostitis	4	–
Necrosis	5	–
Contractura	10	–
Curvature of spine	1	–
Phlegmon	2	–
Paronychia	1	–
Ulcus	13	–
Tumor	1	–
Morbi cutis	2	–
Verrucæ	1	–
Cachexia	6	–
Debilitas (worn out)	89	1·62
Luxatura	1	
Subluxatio	5	
Fractura	11	
Contusio	8	
Concussio cerebri	2	
Vulnus clopetarium	37	1·32
„ incisum	3	
Amputatio	3	
Injury not specified	3	
Causes not specified	26	
Ratio per 1,000 for invaliding from causes not specially calculated	–	3·81
	1,367	24·80

* *See* Note to Table, page 80.

EUROPEAN TROOPS, 1860.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Bengal* Presidency during the Year 1860, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	47,503	3,533	7·44	55		1	1	4	4	1	12	1	1	14	2	4	–	–	4	1	6	–
February	50,534	3,703	7·33	65		27	1	–	1	1	2	4	1	3	8	4	2	1	3	2	5	–
March	49,169	3,885	7·90	151		97	2	–	7	2	17	3	1	3	3	5	1	–	1	2	5	2
April	50,099	4,232	8·45	251		158	7	3	6	7	20	3	7	4	13	4	6	2	5	2	8	1
May	50,215	4,168	8·30	126		31	6	–	11	10	14	2	3	6	1	4	14	5	3	1	14	1
June	50,239	4,362	8·68	184		29	2	2	17	10	8	1	3	7	6	5	68	10	2	2	10	2
July	49,617	4,436	8·94	128		28	–	3	6	9	10	4	3	7	7	8	25	2	4	1	15	1
August	48,862	4,568	9·35	274		159	–	7	12	7	24	–	5	9	7	13	2	4	5	5	14	1
September	48,637	4,720	9·70	215		58	–	5	21	13	47	6	9	13	5	11	6	5	2	2	11	1
October	48,155	4,210	8·74	119		5	–	1	16	19	15	2	9	10	7	9	1	5	7	1	12	–
November	47,132	3,572	7·58	102		6	2	3	12	5	14	5	4	15	6	9	–	2	3	4	9	3
December	46,677	3,219	6·89	73		1	3	1	7	4	8	7	1	8	8	7	–	2	6	2	6	2
						589	24	29	120	88	191	38	47	99	73	83	125	38	45	25	115	14
						Died per 1,000 of Average Strength.																
	48,901	4,102	8·39	1,743	35·64	12·04	·49	·59	2·46	1·80	3·91	·77	·96	2·02	1·50	1·70	2·56	·77	·92	·51	2·35	·29

Deaths out of Hospital, 56. Died per 1,000 of Average Strength, 1·13.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	59	160	274	54	51	51	323	97	12	22	3	1,106	2·26	53·25
Small-pox	8	12	24	32	20	10	2	1	–	–	19	36	164	·34	14·63
Intermittent fevers	998	679	762	1,323	1,186	1,592	1,592	1,996	2,277	2,305	1,980	1,542	18,232		
Remittent fevers	177	122	272	528	399	661	743	509	744	809	381	136	5,481	72·33	·67
Continued fevers	261	239	628	1,541	1,685	1,874	1,625	1,318	1,193	750	371	222	11,657		
Dysentery, acute	121	114	201	268	230	181	223	488	546	349	215	184	3,120	7·52	6·23
Dysentery, chronic	44	44	23	41	50	37	43	39	63	60	57	56	577		
Diarrhœa	319	404	601	705	536	454	550	1,167	727	423	399	378	6,663	13·62	·70
Hepatitis, acute	127	98	137	184	174	204	184	188	179	192	165	141	1,973	6·37	5·52
Hepatitis, chronic	66	92	91	95	115	97	121	113	102	86	76	87	1,141		
Ophthalmia	277	381	438	446	356	282	257	294	298	246	264	239	3,778	7·72	–
Rheumatism	365	360	331	301	265	264	325	360	341	348	328	335	3,923	8·02	–
Venereal diseases	1,645	1,606	1,734	1,463	1,494	1,322	1,179	1,233	1,125	1,168	1,220	1,289	16,478	33·80	–
Phthisis pulmonalis	21	18	14	17	23	25	43	25	23	24	25	48	306	·63	27·12
Heat apoplexy	1	3	3	10	31	157	66	14	11	3	1	1	301	·62	41·52
Delirium tremens	29	27	33	45	52	38	37	40	23	24	23	24	395	·81	9·62
Epilepsy	21	24	24	29	26	27	14	33	18	29	15	14	274	·56	–
Respiratory diseases	400	342	350	326	354	260	270	273	233	314	441	378	3,941	8·06	1·14
Abscess and ulcer	464	453	457	521	570	616	745	520	511	477	404	427	6,165	12·61	–
Wounds and accidents	416	389	486	372	393	307	284	290	284	335	366	470	4,392	8·98	–
All other diseases	569	587	802	1,060	994	990	1,087	1,110	960	780	682	651	10,272	21·00	·34
	6,329	6,053	7,571	9,581	8,957	9,449	9,441	10,334	9,755	8,734	7,454	6,661	100,319		
	Admitted per Cent. of Average Strength in each Month.														
	13·32	11·98	15·40	19·12	17·83	18·81	19·03	21·15	20·05	18·14	15·81	14·27	205·15		

EUROPEAN TROOPS, 1860—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in *Bengal* Proper during the Year 1860, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January -	5,531	290	5·25	9		–	–	–	1	–	5	–	–	1	1	–	–	–	1	–	–	–
February -	5,807	332	5·72	18		15	–	–	–	–	–	1	–	–	–	–	1	–	–	1	–	–
March - -	5,230	367	7·03	25		17	–	–	1	–	5	–	–	1	–	–	–	–	–	–	1	–
April - -	3,676	300	8·11	15		6	–	1	1	–	4	1	–	–	–	–	1	–	1	–	–	–
May - -	4,124	388	9·42	34		17	–	–	1	4	3	–	–	1	–	–	5	2	1	–	–	–
June - -	4,141	448	10·83	15		8	–	–	1	–	2	–	–	–	–	–	1	2	–	–	–	1
July - -	4,154	479	11·54	16		1	–	–	–	1	7	2	–	2	–	–	2	–	–	1	–	–
August - -	4,000	467	11·68	11		–	–	2	2	1	3	–	–	3	–	–	–	–	–	–	–	–
September -	3,747	405	10·81	7		–	–	–	2	–	1	–	–	1	–	2	1	–	–	–	–	–
October -	4,402	322	7·32	11		–	–	1	–	4	3	–	–	2	–	–	–	–	1	–	–	–
November -	5,766	325	5·65	8		4	–	–	–	–	–	–	–	–	–	–	–	1	–	2	1	–
December -	5,053	353	7·00	12		1	–	–	1	3	1	1	–	1	1	–	–	–	–	2	–	1
						69	–	4	10	13	34	4	1	12	2	3	10	5	4	6	2	2
						Died per 1,000 of Average Strength.																
	4,636	373	8·06	181	39·04	14·88	–	·86	2·16	2·80	7·34	·86	·22	2·59	·43	·65	2·16	1·08	·86	1·30	·43	·43

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera - - - -	–	25	28	13	27	14	4	2	2	1	11	2	129	2·78	53·50
Small-pox - - - -	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Intermittent fevers - -	108	64	41	44	76	140	195	255	220	132	202	206	1,683	77·38	·75
Remittent fevers - -	2	4	18	7	60	152	141	77	18	6	5	2	492		
Continued fevers - -	22	36	57	137	216	386	211	92	106	65	47	34	1,409		
Dysentery, acute - -	17	14	32	30	45	31	49	61	39	35	34	37	424	10·76	7·84
Dysentery, chronic - -	1	–	–	3	6	5	3	5	13	3	13	9	61		
Diarrhœa - - - -	40	95	113	99	100	130	102	105	82	43	109	78	1,096	23·64	·09
Hepatitis, acute - - -	11	10	10	10	14	10	9	20	17	9	8	9	137	4·61	6·54
Hepatitis, chronic - -	6	6	6	5	9	6	5	5	5	10	7	7	77		
Ophthalmia - - -	23	25	25	12	18	11	14	12	18	13	27	26	224	4·83	–
Rheumatism - - -	29	35	40	34	32	27	21	26	38	36	41	36	395	8·52	–
Venereal diseases - -	220	188	148	130	167	85	70	71	117	106	152	139	1,593	34·36	–
Phthisis pulmonalis - -	3	1	1	–	2	1	2	1	2	–	2	3	18	·38	17·00
Heat apoplexy - - -	–	1	–	–	5	1	3	–	1	–	–	–	11	·23	90·91
Delirium tremens - -	–	5	8	7	15	13	9	10	2	6	3	4	82	1·77	6·10
Epilepsy - - - -	1	3	1	–	1	1	–	2	1	1	1	–	12	·26	–
Respiratory diseases - -	49	30	29	21	19	18	18	22	13	21	73	42	355	7·66	1·12
Abscess and ulcer - -	64	42	40	59	38	45	38	29	34	46	67	47	549	11·84	–
Wounds and accidents -	63	59	38	27	31	22	19	14	13	27	43	44	400	8·63	–
All other diseases - -	77	66	89	75	84	86	77	73	85	70	101	66	949	20·47	·24
	736	709	724	713	965	1,184	990	882	826	630	946	791	10,096		
	Admitted per Cent. of Average Strength in each Month.														
	13·30	12·21	13·84	19·39	23·40	28·59	23·83	22·05	22·04	14·31	16·40	15·65	217·77		

EUROPEAN TROOPS, 1860—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Dinapore, Benares,* and *Oude* Districts during the Year 1860, and the Prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	12,189	1,229	10·08	13	–	–	–	1	2	–	4	–	1	2	1	1	–	–	–	–	1	–
February	12,552	1,111	8·85	8	–	1	–	–	1	–	–	–	–	1	2	1	–	1	1	–	–	–
March	11,824	1,177	9·95	55	–	41	–	–	1	1	6	–	1	1	–	1	–	–	–	–	2	1
April	12,148	1,301	10·71	146	–	109	1	1	2	5	8	1	4	2	4	1	3	2	–	1	1	1
May	11,006	1,161	10·55	36	–	11	1	–	4	2	7	–	–	2	–	3	2	1	–	–	3	–
June	11,097	1,152	10·38	63	–	17	–	1	3	6	2	–	2	2	1	2	20	2	1	1	3	–
July	10,900	1,146	10·52	41	–	9	–	2	1	3	1	–	–	4	4	3	6	1	3	–	4	–
August	10,890	1,190	10·92	37	–	11	–	3	4	1	7	–	1	2	–	1	–	1	3	1	2	–
September	10,880	1,258	11·57	46	–	12	–	2	2	2	8	1	1	5	1	4	–	2	–	1	4	1
October	10,643	1,057	9·93	23	–	2	–	–	4	1	1	1	1	3	1	2	–	2	–	–	5	–
November	10,322	868	8·41	18	–	1	–	–	3	1	1	1	–	2	1	3	–	–	1	–	3	1
December	10,525	805	7·65	12	–	–	1	–	2	–	–	4	1	2	1	–	–	–	1	–	–	–
						214	3	10	29	22	45	8	12	28	16	22	31	12	10	4	28	4
						Died per 1,000 of Average Strength.																
	11,245	1,121	9·97	498	44·28	19·03	·27	·89	2·58	1·95	4·00	·71	1·07	2·50	1·42	1·95	2·75	1·07	·89	·35	2·50	·35

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admission.
Cholera	–	4	69	192	22	24	17	17	17	3	4	–	369	3·28	58·00
Small-pox	2	–	–	1	2	–	–	–	–	–	–	1	6	·05	50·00
Intermittent fevers	417	168	229	298	197	350	338	497	510	468	366	392	4,230	86·04	·63
Remittent fevers	111	62	167	269	144	225	298	143	206	235	89	50	1,999		
Continued fevers	128	89	319	658	483	507	428	304	248	167	67	48	3,446		
Dysentery, acute	28	40	82	119	73	64	77	167	134	70	49	40	943	9·98	4·72
Dysentery, chronic	11	4	9	20	17	12	20	18	22	21	14	12	180		
Diarrhœa	101	86	158	194	102	75	127	166	115	62	42	82	1,310	11·64	·91
Hepatitis, acute	42	31	40	62	61	70	59	65	74	62	39	45	650	7·89	4·96
Hepatitis, chronic	19	23	13	12	13	17	32	29	20	26	17	17	238		
Ophthalmia	102	74	97	89	74	76	66	84	72	55	64	47	900	8·00	–
Rheumatism	91	68	65	46	63	57	60	81	73	71	67	84	826	7·34	–
Venereal diseases	609	537	529	427	416	382	344	369	335	356	367	381	5,052	44·92	–
Phthisis pulmonalis	4	3	3	6	7	7	10	3	3	5	4	3	58	·51	37·93
Heat apoplexy	–	–	1	6	4	34	8	1	1	–	–	1	56	·49	55·35
Delirium tremens	9	14	9	12	14	5	8	10	8	5	6	9	109	·96	11·00
Epilepsy	6	4	5	7	2	3	2	8	3	9	2	5	56	·49	–
Respiratory diseases	71	73	58	62	70	43	64	48	48	48	54	75	714	6·34	1·40
Abscess and ulcer	130	105	132	153	153	137	190	123	121	100	94	106	1,544	13·73	–
Wounds and accidents	78	43	89	50	62	60	40	42	43	61	59	102	729	6·48	–
All other diseases	143	143	151	171	225	169	209	230	180	193	120	137	2,071	18·41	·32
	2,102	1,571	2,225	2,854	2,204	2,317	2,397	2,405	2,233	2,017	1,524	1,637	25,486		
	Admitted per Cent. of Average Strength in each Month.														
	17·24	12·51	18·81	23·49	20·02	20·87	21·99	22·08	20·52	18·95	14·76	15·55	226·64		

EUROPEAN TROOPS, 1860—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Cawnpore, Meerut,* and *Rohilcund* Districts during the Year 1860, and the Prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	9,769	761	7·79	18	–	–	1	1	1	1	1	–	–	9	–	–	–	–	3	–	1	–
February	10,883	911	8·37	12	–	4	1	–	–	1	–	–	–	–	2	2	–	–	–	–	2	–
March	10,967	936	8·53	37	–	23	2	–	3	1	3	–	–	–	1	3	1	–	–	–	–	–
April	11,481	957	8·34	43	–	21	6	–	1	2	3	–	1	–	4	1	2	–	1	–	1	–
May	11,571	955	8·25	26	–	2	4	–	1	2	1	1	2	2	–	–	1	–	–	1	8	1
June	11,575	998	8·62	48	–	3	2	–	5	2	–	–	1	4	2	2	20	3	–	–	4	–
July	11,480	1,016	8·85	25	–	–	–	1	1	3	–	–	2	1	1	–	8	1	1	–	6	–
August	11,438	1,045	9·14	72	–	37	–	1	3	2	8	–	3	1	2	5	1	1	1	2	5	–
September	11,264	1,194	10·60	57	–	4	–	1	11	5	21	1	5	6	–	–	1	–	1	–	1	–
October	11,036	1,120	10·14	31	–	1	–	–	5	1	5	–	6	3	1	2	–	–	3	–	4	–
November	10,410	908	8·73	27	–	–	–	–	5	–	2	1	1	8	1	2	–	1	1	1	4	–
December	10,490	756	7·21	19	–	–	–	–	2	1	5	–	–	5	–	2	–	1	–	–	2	1
						95	16	4	38	21	49	3	21	39	14	19	34	7	11	4	38	2
						Died per 1,000 of Average Strength.																
	11,031	1,014	8·54	415	37·62	8·61	1·45	·36	3·44	1·90	4·44	·27	1·90	3·54	1·27	1·72	3·08	·63	·99	·36	3·44	·18

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	12	41	37	3	8	5	64	13	3	5	–	191	1·73	49·48
Small-pox	3	8	17	26	13	7	2	–	–	–	1	7	84	·76	18·39
Intermittent fevers	130	102	186	255	198	379	306	320	442	456	341	267	3,382	69·27	·80
Remittent fevers	33	42	43	89	55	100	141	191	379	403	238	62	1,776		
Continued fevers	66	50	131	348	258	364	407	232	307	203	71	46	2,483		
Dysentery, acute	42	14	28	39	47	25	35	106	156	106	49	41	688	6·79	6·04
Dysentery, chronic	13	4	7	1	1	1	1	1	3	7	12	10	61		
Diarrhœa	70	94	163	183	110	81	93	248	221	111	74	81	1,529	13·86	1·31
Hepatitis, acute	33	22	29	40	41	33	52	40	35	60	64	38	487	6·62	7·26
Hepatitis, chronic	26	25	23	22	19	20	16	19	23	18	18	14	243		
Ophthalmia	83	120	89	93	85	55	52	61	56	45	50	56	845	7·66	–
Rheumatism	92	91	82	73	57	59	67	85	73	98	66	81	924	8·38	–
Venereal diseases	290	361	424	327	329	275	243	287	253	249	259	292	3,589	32·54	–
Phthisis pulmonalis	8	6	6	4	3	4	11	8	1	12	9	12	84	·76	21·34
Heat apoplexy	–	–	1	3	8	48	19	4	3	1	1	–	88	·79	38·63
Delirium tremens	–	4	2	6	8	7	6	7	3	5	3	2	53	·48	13·20
Epilepsy	5	11	4	5	7	6	5	6	6	6	5	3	69	·63	–
Respiratory diseases	80	77	59	64	76	55	61	56	45	60	92	77	802	7·27	1·26
Abscess and ulcer	134	170	146	135	152	190	243	135	122	127	92	119	1,765	16·00	–
Wounds and accidents	120	141	145	117	109	68	85	81	64	92	87	118	1,227	11·12	–
All other diseases	125	153	221	366	279	308	331	316	271	207	203	181	2,961	26·84	–
	1,353	1,507	1,847	2,233	1,858	2,093	2,181	2,267	2,476	2,269	1,740	1,507	23,331		
	Admitted per Cent. of Average Strength in each Month.														
	13·85	13·84	16·84	19·45	16·05	18·08	18·99	19·82	21·97	20·56	15·25	14·37	211·50		

EUROPEAN TROOPS, 1860—*continued*.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Agra* District and in *Central India* during the Year 1860, and the Prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	5,153	328	6·37	4		–	–	1	–	–	1	–	–	–	–	1	–	–	–	–	1	–
February	6,169	384	6·23	6		–	–	–	–	–	1	1	–	–	3	–	1	–	–	–	–	–
March	5,541	378	6·82	4		–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	1	1
April	5,791	517	8·93	26		16	–	–	–	–	3	–	–	1	2	1	–	–	–	1	2	–
May	5,798	489	8·45	13		1	1	–	3	–	1	–	–	1	–	–	5	–	–	–	1	–
June	5,715	549	9·61	30		–	–	–	5	–	–	–	–	–	1	1	22	–	–	–	–	1
July	5,467	544	9·96	21		12	–	–	1	–	–	–	–	–	1	1	3	–	–	–	2	1
August	5,065	608	12·01	125		111	–	1	1	–	3	–	1	2	–	–	–	2	–	–	3	1
September	5,331	647	12·15	68		41	–	2	2	–	9	3	2	–	2	1	2	1	1	–	2	–
October	4,931	613	12·43	29		2	–	–	4	3	4	–	2	–	4	2	1	1	3	1	2	–
November	5,938	533	9·00	19		–	–	2	3	2	5	1	2	2	1	–	–	–	1	–	2	1
December	5,997	432	7·21	7		–	–	1	–	–	1	2	–	–	1	–	–	–	2	–	–	–
						183	1	7	20	5	29	7	7	6	15	7	34	4	6	2	14	5
						Died per 1,000 of Average Strength.																
	5,575	502	9·01	352	63·13	32·82	·18	1·25	3·58	·89	5·20	1·25	1·25	1·07	2·69	1·25	6·10	·72	1·07	·36	2·50	·89

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	1	–	29	2	–	25	240	63	4	1	1	366	6·57	50·00
Small-pox	1	1	1	2	2	1	–	–	–	–	–	5	13	·23	7·70
Intermittent Fevers	194	207	151	309	332	413	416	621	764	822	752	467	5,448	125·65	·45
Remittent Fevers	24	4	36	121	74	129	128	37	41	59	16	10	679		
Continued Fevers	5	20	42	84	67	96	80	72	140	153	92	27	878		
Dysentery, Acute	10	17	14	27	9	9	15	58	102	49	25	15	350	7·32	8·82
Dysentery, Chronic	6	14	2	3	3	2	2	1	12	6	3	4	58		
Diarrhœa	40	51	52	60	59	35	77	375	137	56	54	49	1,045	18·74	·67
Hepatitis, Acute	14	13	16	31	26	23	19	14	12	27	20	19	234	6·05	6·23
Hepatitis, Chronic	3	11	12	8	11	11	7	12	14	7	5	2	103		
Ophthalmia	22	70	71	74	60	30	31	32	45	42	37	31	545	9·78	–
Rheumatism	27	36	33	31	25	29	41	40	41	27	34	38	402	7·21	–
Venereal Diseases	157	169	191	181	179	183	170	151	139	129	121	159	1,929	34·60	–
Phthisis Pulmonalis	–	–	1	1	2	2	2	4	5	1	–	1	19	·34	37·00
Heat Apoplexy	1	1	1	–	12	63	22	–	3	2	–	–	105	1·90	32·38
Delirium Tremens	6	2	1	1	1	3	1	8	4	4	4	2	37	·66	10·81
Epilepsy	3	1	7	8	6	7	1	3	2	1	1	1	41	·73	–
Respiratory Diseases	53	43	59	55	40	24	31	34	22	26	71	78	536	9·61	1·12
Abscess and Ulcer	20	39	41	36	41	52	49	31	39	61	35	39	483	8·66	–
Wounds and Accidents	28	39	43	39	44	30	25	34	16	23	37	50	408	7·32	–
All other Diseases	57	59	62	115	106	98	104	77	111	62	64	57	972	17·42	·44
	671	798	836	1,215	1,101	1,240	1,246	1,844	1,712	1,561	1,372	1,055	14,651		
	Admitted per Cent. of Average Strength in each Month.														
	13·02	12·93	15·09	20·98	19·00	21·70	22·80	36·41	32·11	31·65	23·11	17·60	262·79		

EUROPEAN TROOPS, 1860—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Punjab* during the Year 1860, and the Prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	14,861	785	5·28	5		–	–	–	–	–	–	–	–	2	–	–	–	–	–	1	2	–
February	15,123	862	5·70	7		–	–	–	–	–	1	1	–	2	–	–	–	–	1	1	2	–
March	15,607	898	5·75	11		–	–	–	1	–	2	2	–	–	2	1	–	–	1	2	–	–
April	17,003	1,071	6·30	17		–	–	1	2	–	2	1	1	1	1	–	1	–	3	–	4	–
May	17,716	1,126	6·36	13		–	–	–	2	2	2	1	1	–	–	–	1	1	2	–	1	–
June	17,711	1,127	6·36	27		–	–	1	3	2	4	1	–	1	2	–	5	3	1	1	3	–
July	17,616	1,145	6·50	23		1	–	–	3	2	2	2	1	–	1	3	6	–	–	–	2	–
August	17,469	1,160	6·64	28		–	–	–	2	3	3	–	–	1	4	7	1	–	1	2	4	–
September	17,415	1,127	6·47	34		1	–	–	4	6	7	1	1	1	2	3	2	1	–	1	4	–
October	17,143	1,020	5·95	24		–	–	–	3	10	2	1	–	2	1	3	–	1	–	–	1	–
November	14,696	816	5·55	26		1	2	1	1	2	5	2	–	3	2	3	–	–	1	1	1	1
December	14,612	786	5·04	18		–	2	–	2	–	–	–	–	–	5	1	–	1	3	–	4	–
						3	4	3	23	27	30	12	4	13	20	21	16	7	12	9	28	1
						Died per 1,000 of Average Strength.																
	16,414	990	6·03	233	14·20	·18	·25	·18	1·40	1·65	1·83	·73	·25	·79	1·22	1·28	·97	·42	·73	·55	1·70	·07

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	1	–	–	–	3	–	–	1	1	1	–	7	·04	43·00
Small-pox	2	3	6	3	3	2	–	1	–	–	18	23	61	·37	6·06
Intermittent Fevers	144	129	146	413	378	294	321	281	306	412	310	201	3,335		
Remittent Fevers	7	10	8	42	66	55	35	60	99	106	33	12	533	44·34	·73
Continued Fevers	39	44	77	312	607	510	498	616	388	162	92	66	3,411		
Dysentery, Acute	21	27	37	49	54	50	42	87	107	83	47	41	645	4·71	5·43
Dysentery, Chronic	3	5	2	9	12	15	16	14	13	16	13	11	129		
Diarrhœa	66	72	89	162	160	130	149	265	166	149	110	85	1,603	9·76	·25
Hepatitis, Acute	25	22	41	41	32	68	45	49	41	34	33	30	461	5·22	3·86
Hepatitis, Chronic	6	18	26	47	55	42	61	47	37	16	23	17	395		
Ophthalmia	46	85	145	177	118	109	93	105	107	89	84	58	1,216	7·47	–
Rheumatism	122	124	105	114	82	89	136	126	109	108	115	85	1,315	8·01	–
Venereal Diseases	356	328	394	387	392	390	345	351	266	320	310	303	4,142	25·23	–
Phthisis Pulmonalis	1	3	3	4	6	10	17	9	11	6	3	3	76	·47	27·63
Heat Apoplexy	–	–	–	–	1	11	14	9	3	–	–	–	38	·23	42·10
Delirium Tremens	12	1	9	14	12	9	10	5	5	3	6	4	90	·55	7·77
Epilepsy	4	4	7	9	10	10	6	14	5	12	4	3	88	·53	–
Respiratory Diseases	143	115	143	123	149	118	95	113	105	158	148	103	1,513	9·22	·79
Abscess and Ulcer	115	94	90	136	182	190	225	202	190	141	109	110	1,784	10·87	–
Wounds and Accidents	122	102	156	136	145	124	114	118	147	129	133	155	1,581	9·63	–
All other Diseases	152	148	256	322	290	315	363	410	302	236	173	171	3,138	19·12	·29
	1,386	1,335	1,740	2,500	2,754	2,544	2,585	2,882	2,408	2,181	1,765	1,481	25,561		
	Admitted per Cent. of Average Strength in each Month.														
	9·33	8·83	11·15	14·70	15·55	14·36	14·68	16·49	13·83	12·72	12·01	10·13	155·72		

EUROPEAN TROOPS, 1860—*continued.*

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the European Troops serving in the various Provinces of the *Bengal* Presidency during the Year 1860.

DISEASES.	BENGAL PROPER. Average Strength - 4,636; Daily Sick per Cent. of Strength - - 8·06; Admitted per Cent. of Strength - - 217·77; Died per 1,000 of Strength: A. From Cholera - 14·88; B. From all Causes 39·04			DINAPORE, BENARES, AND OUDE. Average Strength - 11,245; Daily Sick per Cent. of Strength - - 9·97; Admitted per Cent. of Strength - - 226·64; Died per 1,000 of Strength: A. From Cholera - 19·03; B. From all Causes 44·28			CAWNPORE AND MEERUT. Average Strength - 11,031; Daily Sick per Cent. of Strength - - 8·54; Admitted per Cent. of Strength - - 211·50; Died per 1,000 of Strength: A. From Cholera - 8·61; B. From all Causes 37·62			AGRA AND CENTRAL INDIA. Average Strength - 5,575; Daily Sick per Cent. of Strength - - 9·01; Admitted per Cent. of Strength - - 262·79; Died per 1,000 of Strength: A. From Cholera - 32·82; B. From all Causes 63·13			PUNJAB. Average Strength - 16,414; Daily Sick per Cent. of Strength - - 6·03; Admitted per Cent. of Strength - - 155·72; Died per 1,000 of Strength: A. From Cholera - ·18; B. From all Causes 14·20			BENGAL PRESIDENCY. Average Strength - 48,901; Daily Sick per Cent. of Strength - - 8·39; Admitted per Cent. of Strength - - 205·15; Died per 1,000 of Strength: A. From Cholera - 12·04; B. From all Causes 35·64		
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.
Cholera	2·78	53·50	14·88	3·28	58·00	19·03	1·73	49·48	8·61	6·57	50·00	32·82	·94	43·00	·18	2·26	53·25	12·04
Small-pox	–	–	–	·05	50·00	·27	·76	18·39	1·45	·23	7·70	·18	·37	6·06	·25	·34	14·63	·49
Fevers	77·38	·75	5·82	86·04	·63	5·42	69·27	·80	5·70	125·65	·45	5·72	44·34	·73	3·23	72·33	·67	4·85
Dysentery	10·76	7·84	8·20	9·98	4·72	4·71	6·79	6·94	4·71	7·32	8·82	6·45	4·71	5·43	2·56	7·52	6·23	4·68
Diarrhœa	23·64	·09	·22	11·64	·91	1·07	13·86	1·31	1·90	18·74	·67	1·25	9·76	·25	·25	13·62	·70	·96
Hepatitis	4·61	6·54	3·02	7·89	4·96	3·92	6·62	7·26	4·81	6·05	6·23	3·76	5·22	3·86	2·01	6·37	5·52	3·52
Ophthalmia	4·83	–	–	8·00	–	–	7·66	–	–	9·78	–	–	7·47	–	–	7·72	–	–
Rheumatism	8·52	–	–	7·34	–	–	8·38	–	–	7·21	–	–	8·01	–	–	8·02	–	–
Venereal Diseases	34·36	–	–	44·92	–	–	32·54	–	–	34·60	–	–	25·23	–	–	33·80	–	–
Phthisis Pulmonalis	·38	17·00	·65	·51	37·93	1·95	·76	21·34	1·72	·34	37·00	1·25	·47	27·63	1·28	·63	27·12	1·70
Heat Apoplexy	·23	90·91	2·16	·49	55·35	2·75	·79	38·63	3·08	1·90	32·38	6·10	·23	42·10	·97	·62	41·52	2·56
Delirium Tremens	1·77	6·10	1·08	·96	11·00	1·07	·48	13·20	·63	·66	10·81	·72	·55	7·77	·42	·81	9·62	·77
Epilepsy	·26	–	–	·49	–	–	·63	–	–	·73	–	–	·53	–	–	·56	–	–
Respiratory Diseases	7·66	1·12	·86	6·34	1·40	·89	7·27	1·26	·99	9·61	1·12	1·07	9·22	·79	·73	8·06	1·14	·92
Abscess and Ulcer	11·84	–	–	13·73	–	–	16·00	–	–	8·66	–	–	10·87	–	–	12·61	–	–
Wounds and Accidents	8·63	–	–	6·48	–	–	11·12	–	–	7·32	–	–	9·63	–	–	8·98	–	–
All other Diseases	20·47	·24	2·16	18·41	·32	3·20	26·84	·39	3·98	17·42	·44	3·75	19·12	·29	2·32	21·00	·34	3·15
	217·77	–	39·04	226·64	–	44·28	211·50	–	37·62	262·79	–	63·13	155·72	–	14·20	205·15	–	35·64

TABLE showing the GENERAL STATISTICS of SICKNESS and MORTALITY in the PRINCIPAL MILITARY STATIONS of the *Bengal* Presidency.

STATIONS.	Period of Observation.	Average Strength during Period of Observation.	DAILY SICK PER CENT. OF AVERAGE STRENGTH IN EACH MONTH.											Daily Sick per Cent. of Average Strength for the Year.	Number of Admissions into Hospital.	Admitted per Cent. of Average Strength.	NUMBER OF DEATHS.		DIED PER 1,000 OF AVERAGE STRENGTH.		
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				A. Cholera.	B. All other Causes.	A. Cholera.	B. All other Causes.	C. All Causes.
Fort William		1,198	7·88	5·00	8·39	6·82	8·14	12·09	11·89	13·38	11·53	7·76	6·63	5·69	8·91	2,804	234·06	40	22	33·39	18·36	51·75
Dum-Dum		1,242	4·60	5·23	7·26	10·60	11·82	10·17	7·56	7·91	5·97	5·72	5·67	4·97	6·68	2,556	205·80	6	43	4·83	34·62	39·45
Barrackpore		1,501	3·91	4·53	3·62	8·48	10·25	11·90	14·79	13·22	11·99	7·37	4·69	8·36	8·70	3,517	234·31	12	27	8·00	17·99	25·99
Berhampore		270	6·11	6·32	6·98	7·13	4·01	3·42	6·87	8·21	10·64	10·06	15·47	16·76	8·93	677	250·74	–	12	–	–	44·44
Hazareebaugh		663	8·55	7·64	7·00	7·75	8·66	6·71	8·90	10·29	12·33	8·68	9·09	12·81	8·76	1,676	197·25	1	7	1·72	8·59	10·31
Dinapore		887	12·46	9·99	13·67	15·39	13·35	11·84	11·79	12·68	11·36	9·17	7·54	7·14	11·69	2,307	260·09	8	33	9·02	37·20	46·22
Ghazeepore (11 mths.)	Av. strength, Jan. to Apr., 987 / Av. strength, May to Nov., 316	555	17·00	13·29	13·88	9·08	17·22	18·93	15·33	16·36	17·49	20·78	17·22	–	13·17	873	88·65	66	10	67·07	11·96	79·03
Benares and Raj Ghat		1,447	13·06	9·17	12·90	14·36	13·60	14·47	14·61	15·82	17·35	12·20	11·05	10·34	17·72 / 13·14	642 / 5,242	204·13 / 362·26	1 / 33	14 / 74	3·16 / 22·80	44·31 / 51·14	47·47 / 73·94
Azimghur		248	12·70	4·37	11·21	12·91	11·51	10·31	12·67	11·59	7·34	10·47	8·34	8·13	10·33	566	228·23	6	6	24·19	24·19	48·38
Goruckpore		698	7·67	6·59	5·31	8·24	8·63	6·99	5·79	6·17	8·45	6·54	6·15	5·79	6·80	1,432	205·16	10	14	14·33	20·06	34·39
Gondah		965	6·98	6·78	7·19	7·26	6·63	7·95	7·62	7·51	7·83	7·87	6·01	5·40	7·10	1,523	157·82	18	6	18·65	6·22	24·87
Fyzabad		1,054	8·81	9·88	9·28	10·47	8·91	8·43	10·56	11·75	10·79	10·57	6·91	6·32	9·39	2,051	194·59	20	15	19·00	14·21	33·21
Sultanpore		257	9·05	10·04	8·33	7·93	13·79	5·05	6·86	8·49	8·74	9·82	8·86	6·94	8·69	542	210·89	1	1	3·89	3·89	7·78
Roy Bareilly		876	6·78	5·88	5·35	5·17	6·52	5·87	6·20	6·13	5·20	5·73	4·92	3·12	5·57	1,383	157·87	1	18	1·14	20·55	21·69
Seetapore		1,018	5·76	5·26	5·57	9·14	9·59	8·12	8·34	8·21	8·08	7·12	8·05	7·98	7·64	1,455	142·92	3	16	2·95	15·71	18·66
Lucknow		2,216	9·22	9·73	11·39	9·80	10·07	10·67	11·72	11·40	13·62	11·51	8·95	7·19	10·42	4,284	193·32	22	47	9·93	21·21	31·14
Allahabad		2,460	4·90	5·52	5·78	7·74	7·38	9·73	9·56	9·33	13·29	13·24	12·27	7·00	8·80	6,293	255·81	27	87	10·97	35·37	46·34
Cawnpore		1,228	7·77	11·18	12·97	12·76	11·57	11·97	13·88	14·61	18·21	17·51	11·21	8·43	12·77	3,380	275·24	24	43	19·54	35·01	54·55
Futtehgurh		386	9·26	8·05	10·79	9·16	6·72	6·70	6·59	6·81	7·05	8·28	6·91	8·08	7·89	826	213·99	–	4	–	–	10·36
Bareilly		1,008	5·86	4·26	3·64	5·06	5·44	4·82	5·57	6·55	6·19	5·13	4·91	5·45	5·25	1,014	100·59	1	21	1·00	20·83	21·83
Shahjehanpore		510	5·39	6·39	8·13	9·66	11·21	9·98	8·87	8·37	6·71	4·19	6·01	3·68	7·61	564	110·58	3	13	5·88	25·50	31·38
Moradabad		463	5·94	5·94	6·62	6·61	7·14	7·81	7·44	8·06	9·95	8·11	6·99	6·24	7·23	543	117·28	–	12	–	–	25·92
Meerut		2,317	7·93	7·56	7·86	7·18	7·75	7·45	7·30	6·96	8·14	7·55	6·30	5·06	7·26	3,900	168·32	–	28	–	–	12·08
Muttra		358	5·50	6·97	6·30	9·70	9·52	10·94	8·82	17·80	9·31	6·09	5·44	4·00	8·47	822	229·61	24	8	67·04	22·34	89·38
Delhi		1,071	8·11	10·21	10·50	11·15	11·61	10·90	11·41	11·38	12·40	11·02	11·80	11·08	10·84	2,398	223·90	1	31	·93	28·94	29·87
Roorkee		443	6·59	9·83	6·90	7·16	7·20	6·30	7·71	6·13	6·55	11·01	5·09	5·09	6·94	943	212·86	–	9	–	–	20·31
Agra		1,238	7·08	6·42	5·97	7·72	7·62	8·03	8·85	9·92	11·38	10·16	6·70	5·66	7·96	2,697	217·85	59	31	47·66	25·04	72·70
Morar		1,279	5·55	5·34	6·35	9·37	8·07	8·57	12·19	14·44	14·52	14·53	7·57	6·50	9·12	3,553	277·79	87	49	68·02	38·31	106·33
Jhansi	11 months, Feb. to Dec.	583	–	7·65	2·61	5·72	8·15	11·16	11·63	28·02	14·75	10·71	7·61	5·00	9·45	2,067	354·54	13	47	22·30	80·62	102·92
Saugor		968	7·59	9·21	11·17	12·49	9·63	11·46	9·32	11·50	11·81	12·04	11·43	6·81	10·46	2,109	217·87	4	14	4·14	14·48	18·62
Nagode		225	4·45	5·76	12·87	10·52	9·62	9·48	9·82	7·75	5·56	8·90	9·14	4·23	8·15	573	254·66	15	7	66·66	31·11	97·77
Jubbulpore		805	8·18	6·43	6·26	8·47	8·91	8·94	9·01	10·19	12·01	15·28	14·89	13·62	10·21	2,268	281·74	5	18	6·21	22·36	28·57
Umballa		1,892	5·71	8·15	98·7	8·08	7·72	6·41	5·84	5·16	5·39	5·39	6·76	2·99	6·42	2,581	136·41	–	27	–	–	14·27
Dugshaie	7 months, April to October	1,014	–	–	–	9·35	7·18	3·13	6·30	5·83	5·12	5·18	–	–	6·00	740	78·14	–	9	–	–	6·90
Subathoo	9 months, March to November	990	–	–	6·91	11·61	9·68	9·27	10·77	10·33	7·98	6·15	4·53	–	8·58	1,378	122·82	–	9	–	–	9·09
Jullundur		816	7·47	2·99	4·65	4·41	4·74	4·29	3·90	3·37	4·66	4·25	4·14	3·65	4·22	1,002	122·79	–	6	–	–	7·35
Ferozepore		1,086	4·07	5·33	4·08	4·02	4·47	4·96	4·94	4·94	5·50	4·41	3·66	3·91	4·52	1,251	115·19	1	9	·92	8·29	9·21
Meean Meer		2,036	5·00	6·96	6·62	5·33	7·04	7·58	6·60	7·06	8·49	7·58	7·31	7·12	6·88	3,368	164·93	2	42	·98	20·62	21·60
Umritsur		470	4·29	4·57	3·90	3·83	5·16	4·12	2·97	4·05	4·77	3·72	5·66	5·33	4·34	379	80·63	–	3	–	–	6·38
Mooltan		836	5·86	5·57	7·04	12·37	9·20	7·06	8·06	8·70	8·83	8·83	7·51	6·78	7·79	1,812	216·74	–	22	–	–	26·31
Dera Ismael Khan		109	3·18	·87	·88	·89	2·04	3·17	4·67	3·13	3·54	4·38	3·13	2·33	2·75	122	111·92	–	1	–	–	9·17
Sealkote		1,387	6·78	6·40	5·25	6·02	8·12	9·70	8·41	7·04	8·06	7·34	5·08	4·83	7·20	2,119	152·77	–	15	–	–	10·81
Rawul Pindee		1,945	4·36	4·58	5·55	5·99	3·70	5·27	6·04	7·45	6·30	5·35	4·33	5·38	5·34	2,933	150·79	–	28	–	–	14·39
Attock	9 months, April to December	169	–	–	–	3·63	5·76	5·61	4·21	6·52	3·23	3·77	3·70	3·00	4·37	268	158·58	–	1	–	–	5·92
Nowshera		744	7·69	–	4·08	4·19	5·21	5·56	6·13	6·93	4·35	6·56	7·14	5·01	5·70	1,525	187·90	–	6	–	–	7·39
Peshawur		2,400	5·22	5·09	4·69	5·10	5·59	5·84	6·27	7·16	7·16	6·20	5·46	4·60	5·66	4,297	179·04	–	29	–	–	12·08

EUROPEAN TROOPS 1860—*continued.*

TABLE showing the Ratio in which the PRINCIPAL DISEASES have contributed to make up the ADMISSION RATE of the Year, in the CHIEF MILITARY STATIONS of the *Bengal* Presideney.

STATIONS.	Average Strength.	ADMITTED INTO HOSPITAL PER CENT. OF AVERAGE STRENGTH.											Admitted Per Cent. of Average Strength from all Causes.
		Cholera.	Heat Apoplexy.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Diseases of the Respiratory Organs.	All other Causes.	
Fort William	1,198	4·92	·25	91·74	10·27	23·12	5·26	4·76	7·93	45·66	3·76	36·39	234·06
Barrackpore	1,501	1·27	·33	82·14	14·46	29·18	3·80	4·60	9·66	34·77	7·73	46·37	234·31
Berhampore	270	–	–	144·44	6·67	10·00	10·74	8·52	13·33	12·22	9·26	35·56	250·74
Hazareebaugh	582	·86	–	68·04	9·11	15·46	·69	2·58	8·59	56·01	3·61	32·30	197·25
Dinapore	887	2·59	·45	92·11	20·07	12·40	8·12	7·67	7·33	55·13	10·03	44·19	260·09
Ghazeepore (3 months)	987	13·68	·10	35·87	5·07	7·19	1·42	·91	1·32	10·84	1·01	11·24	88·65
Ghazeepore (8 months)	316	1·58	–	133·86	2·53	6·64	2·21	7·28	1·58	29·74	2·26	16·45	204·13
Benares	1,447	3·25	1·31	167·11	12·23	23·15	17·35	5·60	8·43	64·96	10·29	48·58	362·26
Azimghur	248	4·03	1·61	56·85	6·05	10·49	7·26	4·84	6·05	79·03	6·05	45·97	228·23
Goruckpore	698	2·15	·43	63·75	14·62	·72	17·05	9·74	4·87	49·71	4·73	37·39	205·16
Gondah	965	2·28	–	33·99	8·70	10·15	·83	6·12	10·78	32·54	4·66	47·77	157·82
Fyzabad	1,054	2·75	·09	53·79	4·36	11·95	5·41	11·67	5·60	40·23	6·55	52·19	194·59
Sultanpore	257	1·55	·39	84·44	–	3·11	3·89	5·45	5·45	73·93	3·11	29·57	210·89
Roy Bareilly	876	·34	–	77·39	1·14	7·53	2·51	5·71	4·34	18·15	5·71	35·05	157·87
Lucknow	2,216	1·58	·40	56·27	11·10	9·47	8·98	11·78	8·89	40·52	5·51	38·82	193·32
Seetapore	1,018	·39	·78	48·92	4·71	3·54	5·40	9·04	6·19	32·42	3·93	27·60	142·92
Allahabad	2,460	2·20	1·22	122·68	5·16	20·85	7·97	6·05	7·08	32·16	8·57	41·87	255·81
Cawnpore	1,228	3·50	·49	90·07	8·39	20·20	5·79	17·02	9·44	55·86	6·19	58·31	275·24
Futtehgurh	386	·26	·52	70·99	3·63	5·70	4·40	10·88	5·18	60·88	7·77	43·78	213·99
Shahjehanpore	510	·78	·19	21·37	3·14	7·06	3·73	9·92	3·53	31·76	3·53	26·27	110·58
Bareilly	1,008	·10	·59	17·46	10·41	8·73	4·56	3·97	2·28	24·51	3·47	24·21	100·59
Moradabad	463	–	·21	20·95	6·48	6·05	2·81	8·00	2·16	50·11	3·02	17·49	117·28
Meerut	2,317	·09	·47	39·66	8·46	9·24	7·72	4·19	9·54	21·45	9·19	58·31	168·32
Delhi	1,071	·19	–	64·71	5·60	11·39	4·85	8·22	16·52	41·36	7·75	63·31	223·90
Muttra	358	13·96	1·68	89·93	5·04	14·25	12·29	1·68	8·66	24·02	6·70	51·40	229·61
Agra	1,238	9·29	1·21	76·50	3·71	18·42	6·38	9·69	7·43	38·29	14·22	32·71	217·85
Morar	1,279	13·60	3·91	139·95	9·30	27·91	5·01	5·71	4·14	22·05	8·52	37·69	277·79
Jhansi (11 months)	583	5·49	6·00	203·26	20·75	23·16	5·83	8·41	9·26	22·13	10·12	40·13	354·54
Saugor	968	1·14	·20	84·92	3·10	7·34	6·92	13·53	7·96	48·24	7·23	37·29	217·87
Nagode	225	11·56	–	115·56	4·89	12·45	4·00	20·45	12·88	29·33	4·00	39·55	254·66
Jubbulpore	805	1·00	·12	140·37	3·85	19·50	5·34	11·92	8·20	52·30	9·94	29·20	281·74
Umballa	1,892	–	·11	27·96	3·23	10·09	3·70	5·33	8·67	25·69	7·29	44·34	136·41
Dugshaie (7 months)	1,014	–	·10	16·37	1·38	5·52	2·47	6·71	5·23	12·13	5·27	13·41	68·59
Subathoo (9 months)	990	–	–	16·36	6·77	7·58	3·13	17·88	6·06	32·12	3·43	29·49	122·82
Jullundur	816	–	–	24·39	3·39	5·02	·86	6·49	3·58	29·41	5·14	44·60	122·79
Ferozepore	1,086	·09	–	26·70	1·57	5·16	3·22	4·60	8·65	21·00	8·56	35·64	115·19
Meean Meer	2,036	·20	·34	30·50	7·61	12·28	5·45	9·87	8·01	35·81	6·58	48·28	164·93
Lahore Citadel	236	–	·42	22·89	2·12	5·93	4·23	3·39	2·12	21·19	4·23	25·85	92·37
Umritsur	470	0·21	–	31·07	2·98	1·48	2·77	10·21	·63	16·17	·83	11·28	80·63
Mooltan	836	–	1·08	79·55	6·94	17·82	6·69	2·27	9·45	22·97	9·69	60·28	216·74
Sealkote	1,387	–	·07	24·37	3·96	4·33	7·49	11·47	12·47	31·80	14·13	42·68	152·77
Rawul Pindee	1,945	–	·05	40·10	2·31	8·28	6·68	4·98	7·92	19·64	14·55	46·28	150·79
Attock (9 months)	169	–	3·55	82·24	5·91	18·34	4·73	1·18	2·98	7·10	5·32	27·22	158·58
Nowshera	812	–	·49	82·02	2·92	17·49	2·95	6·15	9·61	8·25	22·41	36·21	187·80
Peshawur	2,400	–	·04	83·59	7·62	10·16	4·63	3·17	5·91	22·21	7·75	33·96	179·04

EUROPEAN TROOPS, 1860—*continued.*

TABLE showing the PREVALENCE of SMALL-POX in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the Period of Occupation.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												TOTAL Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Presidency Hospitals	—	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fort William	1,198	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dum-Dum	1,242	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Barrackpore	1,501	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Chinsurah Depôt	117	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Raneegunge Depôt	308	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Berhampore	270	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4,636	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Darjeeling Depôt	131	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hazareebaugh	663	–	–	–	1	–	–	–	–	–	–	–	–	1	–	1	–
Dinapore	887	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dehree	230	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ghazeepore	555	2	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–
Benares	1,447	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Azimghur	248	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Goruckpore	698	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Gondah	965	–	–	–	–	1	–	–	–	–	–	–	–	1	–	1	–
Fyzabad	1,054	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sultanpore	257	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rae Bareilly	876	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Seetapore	1,018	–	–	–	–	–	–	–	–	–	–	–	1	1	–	1	–
Lucknow	2,216	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–
	11,245	2	–	–	1	2	–	–	–	–	–	–	1	6	·05	3	·27
Allahabad	2,460	–	–	3	–	1	–	–	–	–	–	–	–	4	–	2	–
Cawnpore	1,228	–	–	1	7	–	1	2	–	–	–	–	–	11	–	1	–
Allahabad and Cawnpore General Hospitals	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Futtehgurh	386	–	–	1	1	–	–	–	–	–	–	–	–	2	–	–	–
Humeerpore	101	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Oraie	205	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bareilly	1,008	–	–	1	4	1	2	–	–	–	–	–	–	8	–	2	–
Shahjehanpore	510	–	2	1	7	–	–	–	–	–	–	–	–	10	–	–	–
Moradabad	463	–	–	1	–	–	–	–	–	–	–	–	2	3	–	–	–
Meerut	2,317	1	2	8	3	9	3	–	–	–	–	–	5	31	–	7	–
Muttra	358	–	4	–	–	–	–	–	–	–	–	–	–	4	–	–	–
Delhi	1,071	1	–	1	2	2	1	–	–	–	–	1	–	8	–	3	–
Roorkee	443	–	–	–	2	–	–	–	–	–	–	–	–	2	–	1	–
Landour Depôt	155	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nynee Tal Depôt	326	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	11,031	3	8	17	26	13	7	2	–	–	–	1	7	84	·76	16	1·45
Agra	1,238	1	–	–	2	2	1	–	–	–	–	–	–	6	–	1	–
Morar	1,279	–	–	–	–	–	–	–	–	–	–	–	5	5	–	–	–
Gwalior District	526	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhansi (11 months)	583	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Saugor	968	–	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Nagode	225	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jubbulpore	805	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–
	5,575	1	1	1	2	2	1	–	–	–	–	–	5	13	·23	1	·18
Umballa	1,892	1	–	4	1	–	–	–	–	–	–	9	9	24	–	3	–
Dugshaie (7 months)	1,014	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–
Subathoo (9 months)	990	–	2	1	2	–	–	–	–	–	–	1	1	7	–	–	–
Kussowlie Depôt	145	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phillour	147	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur	816	–	1	–	–	–	2	–	–	–	–	1	1	5	–	–	–
Ferozepore	1,086	–	–	–	–	–	–	–	1	–	–	2	3	6	–	–	–
Meean Meer	2,036	–	–	–	–	1	–	–	–	–	–	4	4	9	–	–	–
Lahore Citadel	236	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–
Umritsur	470	1	–	–	–	–	–	–	–	–	–	–	2	3	–	–	–
Govindghur	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mooltan	836	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–
Dera Ismael Khan	109	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kangra	103	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sealkote	1,387	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Jhelum	120	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–
Rawul Pindee	1,945	–	–	–	–	–	–	–	–	–	–	–	3	3	–	–	–
Attock (9 months)	169	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowshera	812	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Campbelpore	146	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peshawur	2,400	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Murree Depôt	166	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	16,414	2	3	6	3	3	2	–	1	–	–	18	23	61	·37	4	·25
BENGAL PRESIDENCY	48,901	8	12	24	32	20	10	2	1	–	–	19	36	164	·34	24	·49

EUROPEAN TROOPS, 1860—*continued.*

TABLE showing the Prevalence of CHOLERA in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for 12 Months.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												TOTAL Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	Mar.	Apr.	May	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Presidency Hospitals	–	–	16	22	3	–	2	–	–	1	–	–	–	44	–	25	–
Fort William	1,198	–	11	8	3	20	13	2	1	1	–	–	–	59	–	40	–
Dum-Dum	1,242	–	5	–	1	6	–	–	1	1	–	–	–	14	–	6	–
Barrackpore	1,501	–	4	4	7	1	1	–	–	–	–	–	2	19	–	12	–
Chinsurah Depôt	117	–	3	–	2	–	–	2	–	–	1	1	–	9	–	1	–
Raneegunge Depôt	308	–	2	16	–	–	–	–	–	–	–	10	–	28	–	10	–
Berhampore	270	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4,636	–	25	28	13	27	14	4	2	2	1	11	2	129	2·78	69	14·88
Darjeeling, on march to	131	–	–	–	3	–	–	–	–	–	–	–	–	3	–	2	–
Hazareebaugh	663	–	–	–	–	–	–	4	1	–	–	–	–	5	–	1	–
Dinapore	887	–	1	2	8	7	3	–	–	–	2	–	–	23	–	8	–
Dehree	230	–	1	–	1	7	9	4	5	–	–	–	–	27	–	20	–
Ghazeepore	555	–	–	21	115	2	–	1	2	–	–	1	–	142	–	69	–
Benares	1,447	–	2	28	6	1	1	7	–	–	1	1	–	47	–	33	–
Azimghur	248	–	–	4	6	–	–	–	–	–	–	–	–	10	–	6	–
Goruckpore	698	–	–	–	4	–	11	–	–	–	–	–	–	15	–	10	–
Gondah	965	–	–	12	10	–	–	–	–	–	–	–	–	22	–	18	–
Fyzabad	1,054	–	–	1	27	–	–	–	–	–	–	1	–	29	–	20	–
Sultanpore	257	–	–	–	2	–	–	–	–	1	–	1	–	4	–	1	–
Rae Bareilly	876	–	–	–	3	–	–	–	–	–	–	–	–	3	–	1	–
Seetapore	1,018	–	–	–	–	4	–	–	–	–	–	–	–	4	–	3	–
Lucknow	2,216	–	–	1	7	1	–	1	9	16	–	–	–	35	–	22	–
	11,245	–	4	69	192	22	24	17	17	17	3	4	–	369	3·28	214	19·03
Allahabad	2,460	–	2	20	19	2	–	2	2	1	1	5	–	54	–	27	–
Cawnpore	1,228	–	–	5	12	1	–	2	19	4	–	–	–	43	–	24	–
Allahabad and Cawnpore General Hospitals.	–	–	10	12	3	–	3	–	–	–	–	–	–	28	–	11	–
Futtehgurh	386	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–
Humeerpore	101	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Oraie	205	–	–	–	–	–	4	–	–	–	2	–	–	6	–	4	–
Bareilly	1,008	–	–	1	–	–	–	–	–	–	–	–	–	1	–	1	–
Shahjehanpore	510	–	–	1	3	–	–	–	–	–	–	–	–	4	–	3	–
Moradabad	463	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meerut	2,317	–	–	–	–	–	1	1	–	–	–	–	–	2	–	–	–
Muttra	358	–	–	–	–	–	–	–	42	8	–	–	–	50	–	24	–
Delhi	1,071	–	–	1	–	–	–	–	1	–	–	–	–	2	–	1	–
Roorkee	443	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Landour Depôt	155	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nynee Tal Depôt	326	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	11,031	–	12	41	37	3	8	5	64	13	3	5	–	191	1·74	95	8·61
Agra	1,238	–	–	–	–	1	–	–	77	36	1	–	–	115	–	59	–
Morar	1,279	–	–	–	2	–	–	15	130	25	1	1	–	174	–	87	–
Gwalior District	526	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhansi (11 months)	583	–	–	–	–	–	–	–	31	1	–	–	–	32	–	13	–
Saugor	968	–	1	–	1	–	–	7	1	–	1	–	–	11	–	4	–
Nagode	225	–	–	–	26	–	–	–	–	–	–	–	–	26	–	15	–
Jubbulpore	805	–	–	–	–	1	–	3	1	1	1	–	1	8	–	5	–
	5,575	–	1	–	29	2	–	25	240	63	4	1	1	366	6·57	183	32.82
Umballa	1,892	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dughshaie (7 months)	1,014	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subathoo (9 months)	990	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie Depôt	145	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phillour	147	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur	816	–	–	–	–	–	–	–	–	1	–	–	–	1	–	1	–
Ferozepore	1,086	–	–	–	–	–	3	–	–	–	1	–	–	4	–	2	–
Meean Meer	2,036	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lahore Citadel	236	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–
Umritsur	470	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Govindghur	100	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Mooltan	836	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera Ismael Khan	109	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kangra	103	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sealkote	1,387	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhelum	120	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawul Pindee	1,945	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Attock (9 months)	169	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowshera	812	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Campbellpore	146	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peshawur	2,400	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Murree Depôt	166	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	16,414	–	1	–	–	–	3	–	–	1	1	1	–	7	·04	3	·18
BENGAL PRESIDENCY	48,901	–	59	160	274	54	51	51	323	97	12	22	3	1,106	2·26	589	12·04

EUROPEAN TROOPS, 1860 - *continued.*

TABLE showing the MORTALITY in each Station, the Causes of DEATH, and the Ratio of DEATHS to STRENGTH.

STATIONS.	Average Strength for the Period of Occupation.	CAUSES OF DEATHS IN HOSPITALS.																	Number of Deaths.	Died per 1,000 of Average Strength.		
		Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.		A. Cholera	B. Other Causes	C. All Causes.
Presidency Hospitals	–	25	–	1	–	–	4	4	2	1	6	11	–	3	2	–	5	–	64	–	–	–
Fort William	1,198	40	–	–	5	–	2	–	–	2	–	1	3	3	2	2	–	2	62	33·39	18·36	51·75
Dum-Dum	1,242	6	–	1	5	4	19	–	–	5	1	–	2	2	–	3	1	–	49	4·83	34·62	39·45
Barrackpore	1,501	12	–	2	–	2	10	4	1	1	–	1	5	–	–	1	–	–	39	8·00	17·99	25·99
Chinsurah Depôt	117	1	–	1	–	–	–	–	–	1	1	1	–	–	1	–	–	–	6	–	–	–
Raneegunge Depôt	308	10	–	–	–	–	2	–	–	–	–	–	–	–	1	–	–	–	13	–	–	–
Berhampore	270	–	–	–	–	7	1	–	–	3	–	–	–	–	–	–	1	–	12	–	–	44·44
	4,636	69	–	4	10	13	31	4	1	12	2	3	10	5	4	6	2	2	181	14·88	24·16	39·04
Darjeeling Depôt	131	2	–	–	–	–	2	–	–	–	2	–	–	–	–	–	–	1	7	–	–	–
Hazareebaugh (11 months)	663	1	1	–	1	–	2	–	1	–	–	1	–	–	1	–	–	–	8	1·72	8·59	10·31
Dinapore	887	8	–	3	3	5	5	–	–	3	2	2	4	–	1	1	4	–	41	9·02	37·20	46·22
Dehree	230	20	–	1	–	–	7	–	1	–	–	–	3	–	2	–	1	–	36	–	–	–
Ghazeepore	555	69	–	–	1	9	4	–	5	–	2	3	–	–	1	–	2	1	95	59·38	46·85	106·23
Benares	1,447	33	–	4	11	6	8	4	1	12	–	4	10	4	1	1	5	1	107	22·80	51·14	73·94
Azimghur	248	6	–	–	–	–	1	–	–	–	1	1	2	1	–	–	1	–	12	24·19	24·19	48·38
Goruckpore	698	10	–	–	2	–	–	1	–	1	–	–	3	3	–	–	3	–	24	14·33	20·06	34·39
Gondah	965	18	1	–	–	1	3	–	–	–	1	–	–	–	–	–	1	–	24	18·65	6·22	24·87
Fyzabad	1,054	20	–	–	2	–	3	3	–	1	–	3	1	–	1	–	–	–	35	19·00	14·21	33·21
Sultanpore	257	1	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	2	3·89	3·89	7·78
Rae Bareilly	876	1	–	1	–	–	–	–	2	4	1	2	–	2	1	–	5	–	19	1·14	20·55	21·69
Seetapore	1,018	3	1	–	2	–	4	–	1	1	1	–	3	–	–	1	2	–	19	2·95	15·71	18·66
Lucknow	2,216	22	–	1	7	–	6	–	1	6	5	6	5	2	2	1	4	1	69	9·93	21·21	31·14
	11,245	214	3	10	29	22	45	8	12	28	16	22	31	12	10	4	28	4	498	19·03	25·25	44·28
Allahabad	2,460	27	2	–	14	6	22	–	4	13	1	2	11	3	3	–	6	–	114	10 97	35·37	46·34
Cawnpore	1,228	24	1	–	8	–	7	1	9	4	–	3	2	2	2	–	4	–	67	19·51	35·01	54·55
Allahabad and Cawnpore General Hospitals.	–	11	–	–	1	–	2	–	–	5	1	2	4	1	1	–	2	–	30	–	–	–
Futtehgurh	386	–	–	–	1	–	1	–	–	–	–	–	2	–	–	–	–	–	4	–	–	10·36
Humeerpore	101	–	–	–	–	1	–	–	–	–	–	–	–	–		–	–	–	1	–	–	10·00
Oraie	205	4	–	1	5	–	1	1	–	–	–	–	7	–		–	–	–	19	19·51	73·17	92·68
Bareilly	1,808	1	2	–	–	–	8	–	–	4	2	1	1	–		–	3	–	22	1·00	20·83	21·83
Shahjehanpore	510	3	–	–	3	2	–	–	–	1	1	2	1	–		–	3	–	16	5·88	25·50	31·38
Moradabad	463	–	–	–	–	–	3	–	1	1	–	2	1	1	–	2	1	–	12	–	–	25·92
Meerut	2,317	–	7	1	2	4	–	–	–	6	1	3	1	–	–	–	2	1	28	–	–	12·08
Muttra	358	24	–	–	2	1	–	–	–	–	–	1	3	–	–	–	–	1	32	67·04	22·34	89·38
Delhi	1,071	1	3	1	–	6	3	–	1	5	1	3	–	–	1	–	7	–	32	·93	28·94	29·87
Roorkee	443	–	1	–	2	1	2	–	–	–	–	–	1	–	–	1	1	–	9	–	–	20·31
Landour Depôt	155	–	–	–	–	–	–	–	1	–	4	–	–	–	1	1	2	–	9	–	–	–
Nynee Tal Depôt	326	–	–	1	–	–	–	1	5	–	3	–	–	–	3	–	7	–	20	–	–	–
	11,031	95	16	4	38	21	49	3	21	39	14	19	34	7	11	4	38	2	415	8·61	29·01	37·62
Agra	1,238	59	1	2	5	–	1	–	–	2	3	4	8	–	2	–	2	1	90	47·66	25·04	72·70
Morar	1,279	87	–	1	8	1	4	4	4	2	4	1	11	2	2	1	4	–	136	68·02	38·31	106·33
Gwalior District	526	–	–	–	–	–	–	–	1	1	1	–	–	–	–	–	–	–	3	–	–	4·29
Jhansi (11 months)	583	13	–	–	6	–	15	3	–	–	6	–	13	1	2	1	–	–	60	22·30	80·62	102·92
Saugor	968	4	–	1	–	1	2	–	1	–	1	1	2	1	–	–	2	2	18	4·14	14·48	18·62
Nagode	225	15	–	–	–	1	–	–	–	–	–	–	–	–	–	–	5	1	22	66·66	31·11	97·77
Jubbulpore	805	5	–	3	1	2	7	–	1	1	–	1	–	–	–	–	1	1	23	6·21	22·36	28·57
	5,575	183	1	7	20	5	29	7	7	6	15	7	34	4	6	2	14	5	352	32·82	30·31	63·13
Umballa	1,892	–	3	–	1	5	5	–	–	2	–	3	–	–	3	–	5	–	27	–	–	14·27
Dugshaie (7 months)	1,014	–	–	1	–	–	2	1	1	–	2	1	–	–	1	–	–	–	9	–	–	6·90
Subathoo (9 months)	999	–	–	–	1	1	1	–	–	1	1	–	–	–	1	1	2	–	9	–	–	9 09
Kussowlie Depôt	145	–	–	–	1	–	1	–	–	–	1	1	–	–	1	–	3	–	8	–	–	–
Phillour	147	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur	816	–	–	–	1	–	1	–	–	–	1	2	–	–	–	–	1	–	6	–	–	7·35
Ferozepore	1,086	1	–	–	1	–	1	1	1	1	–	–	–	–	2	1	1	–	10	·92	8·29	9·21
Meean Meer	2,036	2	–	1	6	2	5	5	2	2	3	3	2	1	1	3	5	1	41	·98	20·62	21·60
Lahore Citadel	236	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	1	–	3	–	–	12·71
Umritsar	470	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	6·38
Govindghur	100	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	2	–	–	20·00
Mooltan	836	–	–	–	2	1	4	–	–	1	2	–	7	2	1	–	2	–	22	–	–	26·31
Dera Ismael Khan	109	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	9·17
Kangra	103	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	9·18
Sealkote	1,387	–	–	–	1	2	1	–	–	4	3	1	–	2	–	–	1	–	15	–	–	10·81
Jhelum	120	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawul Pindee	1,945	–	1	–	3	3	3	1	–	2	1	7	2	–	1	–	4	–	28	–	–	14·39
Attock (9 months)	169	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	5·92
Nowshera	812	–	–	–	–	4	–	–	–	–	–	–	1	–	–	1	–	–	6	–	–	7·39
Campbellpore	146	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	2	–	–	9·35
Peshawur	2,400	–	–	1	3	8	1	4	–	–	4	2	–	1	1	2	2	–	29	–	–	12·08
Murree Depôt	166	–	–	–	–	1	2	–	–	–	2	–	–	1	–	–	1	–	7	–	–	–
	16,414	3	4	3	23	27	30	12	4	13	20	21	16	7	12	9	28	1	233	·18	14·02	14·20
BENGAL PRESIDENCY	48,901	589	24	29	120	88	191	38	47	99	73	83	125	38	45	25	115	14	1,743	12·04	23·60	35·64

EUROPEAN TROOPS, 1860—*continued.*

TABLE showing the Causes of DEATH and INVALIDING.

TOTAL LOSS TO THE SERVICE BY DEATH AND INVALIDING, 3,955. PER 1,000 OF AVERAGE STRENGTH, 80·88.

NUMBER OF MEN LOST TO THE SERVICE BY DEATH, 1,799.

CAUSES OF DEATH.	Died in Hospital.	Died out of Hospital.	Died per 1,000 of Strength.
Variola	24	–	·49
Scarlatina	1	–	–
Tonsillitis	1	–	–
Febris	237	–	4·85
Erysipelas	4	–	–
Anthrax	1	–	–
Dysenteria	229	–	4·68
Diarrhœa	47	–	·96
Cholera	589	–	12·04
Rheumatismus	6	–	–
Syphilis	6	–	–
Bubo	1	–	–
Strictura Urethræ	1	–	–
Hydrophobia	4	–	–
Febris a fame	1	–	–
Scorbutus	1	–	–
Ebriositas	2	–	–
Anasarca	4	–	–
Carcinoma	1	–	–
Tumor	2	–	–
Scrofula	1	–	–
Abscessus Psoanus	1	–	–
Phthisis Pulmonalis	83	–	1·70
Hæmoptysis	4	–	–
Meningitis	2	–	–
Encephalitis	5	–	–
Apoplexia	125	16	2·88
Paralysis	3	–	–
Hemiplegia	1	–	–
Paraplegia	1	–	–
Delirium Tremens	38	–	·77
Mania	1	–	–
Dementia	7	–	–
Cephalæa	1	–	–
Morbus Cordis	20	4	·51
Pericarditis	1	–	–
Aneurisma	4	7	–
Syncope	1	–	–
Hæmorrhagia	1	–	–
Bronchitis	16	–	·92
Pleuritis	3	–	
Pneumonia	24	–	
Dyspnœa	1	–	
Gastritis	4	–	–
Enteritis	1	–	–
Peritonitis	4	–	–
Dyspepsia	2	–	–
Colica	3	–	–
Hæmatemesis	1	–	–
Melæna	1	–	–
Splenitis	3	–	–
Hepatitis	172	–	3·52
Icterus	2	–	–
Ascites	6	–	–
Nephritis	3	–	–
Ischuria	2	–	–
Albumenuria	2	–	–
Caries	1	–	–
Necrosis	1	–	–
Abscessus	2	–	–
Cachexia	3	–	–
Debilitas	6	–	–
Struck by Lightning	–	1	
Rupture of Spleen	–	1	
Rupture of Bladder	1	–	
Drowned	–	15	
Fracture	5	–	
Contusion	3	–	
Concussion	1	–	
Concussion of Brain	4	1	·77
Incised wound	1	–	
Gunshot wound	–	1	
Homicide	–	1	
Suicide	–	4	
Executed	–	1	
Found dead; cause of death unknown	–	4	
Disease not specified	3	–	–
Ratio per 1,000 for Deaths from causes not specially calculated.	–	–	2·68
	1,743	56	36·77

NUMBER OF MEN LOST TO THE SERVICE BY INVALIDING, 2,156.*

CAUSES OF INVALIDING.	Invalided for Discharge from the Service.	Invalided for Change of Climate.	Invalided per 1,000 of Strength.
Febris	71	53	2·54
Ophthalmia	111	51	3·31
Dysenteria	89	85	3·56
Diarrhœa	23	17	·82
Cholera	4	3	–
Rheumatismus	265	137	8·22
Syphilis	28	28	
Bubo	1	1	1·39
Strictura Urethræ	6	4	
Anasarca	3	1	–
Scrofula	12	5	
Phthisis Pulmonalis	55	24	
Hæmoptysis	3	2	2·15
Abscessus Psoanus	1	–	
Morbus Coxæ	2	1	
Apoplexia	4	10	–
Insolatio	2	–	–
Paralysis	12	6	–
Hemiplegia	4	–	–
Paraplegia	3	–	–
Mania	12	2	
Monomania	1	–	·79
Dementia	16	8	
Epilepsia	34	4	·77
Cephalæa	2	2	–
Neuralgia	2	1	–
Otitis	9	2	–
Dysecœa	5	6	–
Morbus Cordis	44	22	
Palpitatio	31	10	2·29
Aneurisma	3	2	
Varix	6	1	–
Epistaxis	–	2	–
Bronchitis	41	24	
Pleuritis	1	1	
Pneumonia	2	1	1·45
Asthma	1	–	
Peritonitis	1	–	–
Hernia	7	3	–
Dyspepsia	10	8	–
Hæmatemesis	1	1	–
Hæmorrhois	14	2	–
Fistula in Ano	1	–	–
Splenitis	9	9	–
Hepatitis	177	141	6·50
Icterus	4	–	–
Ascites	3	–	–
Melæna	–	1	–
Nephritis	2	1	–
Ischuria	1	–	–
Cystitis	1	1	–
Albumenuria	1	–	–
Orchitis	6	3	–
Hydrocele	–	1	–
Arthritis	2	–	–
Ostitis	3	1	–
Exostosis	3	–	–
Necrosis	2	2	–
Caries	1	–	–
Contractura	4	2	–
Morbi Cutis	7	2	–
Abscessus	5	2	–
Ulcus	4	4	–
Tumor	1	–	–
Debilitas (worn out)	131	66	4·03
Ambustio	1	–	
Luxatura	1	1	
Subluxatio	4	–	
Fractura	12	3	
Contusio	5	3	
Concussio	1	2	1·11
Concussio Cerebri	1	–	
Vulnus	11	5	
Amputatio	2	–	
Accident	2	–	
Not specified	14	12	
Ratio, per 1,000, for Invaliding from causes not specially calculated.	–	–	5·16
	1,364	792	44·09

* *See* note to Table 15.

EUROPEAN TROOPS, 1861.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Bengal* Presidency, during the Year 1861, and the Prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	42,494	2,896	6·81	61	–	2	10	2	4	1	6	1	1	6	2	5	–	1	13	–	6	1
February	45,032	3,112	6·91	48	–	1	4	1	1	1	4	2	–	8	3	3	2	–	7	1	10	–
March	44,021	3,208	7·29	51	–	12	9	2	1	3	3	–	2	4	2	2	–	1	3	2	4	1
April	46,907	3,840	8·19	91	–	13	8	2	1	9	8	1	6	5	6	8	3	3	4	5	9	–
May	46,500	4,011	8·62	100	–	13	7	6	2	9	10	2	4	6	2	3	16	4	7	–	8	1
June	46,433	3,901	8·40	88	–	13	4	1	1	6	6	1	4	4	2	13	12	1	8	2	8	2
July	46,076	4,050	8·79	316	–	231	1	2	6	11	16	2	9	9	3	10	4	3	2	2	5	–
August	45,766	4,381	9·57	768	–	658	–	5	10	15	27	1	15	7	2	7	10	1	2	1	7	–
September	45,114	4,518	10·01	227	–	113	–	1	13	19	19	2	15	12	1	7	9	2	3	1	10	–
October	44,686	4,023	9·00	122	–	6	–	7	8	11	19	8	12	8	7	8	1	1	6	3	16	1
November	42,821	3,303	7·71	71	–	3	–	3	3	3	11	4	5	8	3	10	2	3	2	3	7	1
December	42,630	2,896	6·79	66	–	–	–	2	2	4	4	8	3	11	9	7	1	–	4	1	10	–
						1065	43	34	52	92	133	32	76	88	42	83	60	20	61	21	100	7
						Died per 1,000 of Average Strength.																
	44,879	3,680	8·20	2,009	44·77	23·73	·96	·76	1·16	2·05	2·96	·71	1·69	1·96	·93	1·85	1·34	·45	1·36	·47	2·23	·16

Deaths out of Hospital, 53. Died per 1,000 of Average Strength, 1·16.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jany.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	6	5	23	29	24	21	399	995	148	8	4	1	1,663	3·71	64·04
Small-pox	48	26	47	68	30	8	3	–	–	1	1	1	232	·52	18·53
Intermittent Fevers	977	668	692	1,062	870	1,034	1,675	1,054	2,950	3,826	2,481	1,875	19,764		
Remittent Fevers	52	43	54	168	152	244	345	468	1,219	501	156	57	3,459	71·52	·55
Continued Fevers	187	192	457	1,484	1,034	777	1,009	1,214	1,190	868	329	134	8,875		
Dysentery	168	151	143	219	172	219	340	464	364	287	224	187	2,938	6·55	5·62
Diarrhœa	285	225	334	627	569	529	1,443	1,284	699	474	304	257	7,030	15·66	1·08
Hepatitis	204	186	192	256	240	222	301	252	253	276	175	151	2,708	6·04	4·80
Ophthalmia	240	245	275	419	236	197	222	229	226	304	171	185	2,949	6·57	–
Rheumatism	377	294	304	367	280	321	419	290	288	336	260	313	3,849	8·58	–
Venereal Diseases	1,435	1,473	1,452	2,032	1,447	1,318	1,536	1,143	977	1,414	1,156	1,184	16,567	36·91	–
Phthisis Pulmonalis	26	29	17	20	17	23	33	30	29	23	24	36	307	·68	27·03
Heat Apoplexy	1	3	–	8	20	21	15	14	13	2	1	–	98	·22	61·22
Delirium Tremens	15	19	10	20	33	18	26	15	8	21	14	6	205	·46	9·75
Epilepsy	14	10	11	14	13	11	22	19	13	19	9	9	164	·36	–
Respiratory Diseases	396	351	370	434	299	264	305	200	191	275	278	249	3,612	8·05	1·69
Abscess and Ulcer	370	414	346	487	312	581	542	415	393	418	337	327	5,142	11·46	–
Wounds and Accidents	359	310	344	428	338	266	321	225	269	347	285	390	3,882	8·65	–
All other Diseases	616	560	563	853	879	706	931	815	693	732	534	480	8,362	18·63	·31
	5,776	5,204	5,634	8,995	7,165	6,780	9,887	9,726	9,923	10,131	6,743	5,842	91,806		
	Admitted per Cent. of Average Strength in each Month.														
	13·59	11·56	12·79	19·18	15·41	14·60	21·46	21·25	22·00	22·67	15·74	13·70	204·56		

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in *Bengal* Proper, during the Year 1861, and the Prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	4,088	308	7·53	7	–	1	–	–	1	–	1	1	–	1	1	1	–	–	–	–	1	–
February	4,058	301	7·42	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March	3,635	270	7·43	10	–	9	–	–	–	–	2	–	1	–	–	–	–	–	–	–	1	–
April	4,463	291	6·52	13	–	6	–	–	–	–	2	–	–	2	–	1	–	–	1	1	1	–
May	3,719	274	7·37	10	–	3	–	–	–	–	3	1	–	1	–	1	–	–	–	–	1	–
June	3,683	309	8·39	9	–	2	–	–	–	1	1	–	–	–	–	3	–	–	–	–	2	–
July	3,438	322	9·36	12	–	–	–	–	2	1	2	1	–	2	–	–	1	2	1	–	–	–
August	3,585	306	8·53	14	–	–	–	–	–	1	7	1	1	2	–	–	1	–	–	–	1	–
September	3,568	276	7·74	4	–	–	–	–	–	–	2	1	–	–	–	–	–	–	–	–	1	–
October	3,950	279	7·06	17	–	2	–	–	2	4	3	1	–	–	1	1	–	–	1	1	1	–
November	3,496	226	6·46	6	–	–	–	–	2	–	–	–	–	1	–	–	1	–	–	1	1	–
December	2,579	142	5·51	8	–	–	–	–	–	3	1	1	–	2	1	–	–	–	–	–	–	–
						24	–	–	7	10	22	7	2	11	3	6	4	2	3	3	7	–
						Died per 1,000 of Average Strength.																
	3,689	275	7·45	111	30·09	6·51	–	–	1·90	2·71	5·96	1·90	·54	2·98	·81	1·62	1·08	·54	·81	·81	1·90	–

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions
Cholera	4	3	16	15	6	3	1	–	–	2	–	–	50	1·35	48·00
Small-pox	4	–	–	–	–	–	–	–	–	–	–	–	4	·11	–
Intermittent Fevers	93	71	70	60	94	176	280	163	106	152	92	81	1,438		
Remittent Fevers	3	4	–	–	3	6	4	2	16	27	5	–	70	58·80	·78
Continued Fevers	7	20	29	90	38	48	56	62	130	89	59	33	661		
Dysentery	51	40	29	42	27	51	95	65	47	49	32	30	558	15·13	5·20
Diarrhœa	54	53	88	113	70	112	141	86	62	68	65	32	944	25·59	·21
Hepatitis	22	11	14	16	12	13	15	14	17	22	13	10	179	4·85	7·82
Ophthalmia	29	18	8	15	15	17	14	13	24	71	20	13	257	6·97	–
Rheumatism	42	44	33	41	21	26	37	30	26	34	20	15	369	10·00	–
Venereal Diseases	133	125	104	113	108	67	116	67	57	70	80	55	1,095	29·68	–
Phthisis Pulmonalis	3	1	2	4	–	1	1	3	4	3	1	1	24	·65	25·00
Heat Apoplexy	–	–	–	–	1	–	2	1	1	1	1	–	7	·19	57·14
Delirium Tremens	2	8	4	1	5	1	9	2	1	4	4	–	41	1·11	4·90
Epilepsy	1	2	4	1	2	2	1	5	2	3	2	–	25	·68	–
Respiratory Diseases	37	30	25	32	20	17	26	18	23	22	23	10	283	7·67	1·06
Abscess and Ulcer	35	38	22	37	35	27	52	43	48	54	33	22	446	12·09	–
Wounds and Accidents	23	24	21	39	33	29	31	27	26	33	31	26	343	9·30	–
All other Diseases	75	75	75	96	82	62	96	77	104	103	67	15	927	25·13	·28
	618	567	544	715	572	658	977	678	694	807	548	343	7,721		
	Admitted per Cent. of Average Strength in each Month.														
	15·12	13·97	14·97	16·02	15·38	17·87	28·41	18·91	19·45	20·43	15·67	13·30	209·30		

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Dinapore, Benares,* and *Oude* Districts during the Year 1861, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	9,526	587	6·16	9	–	–	1	–	–	–	–	–	–	–	–	–	–	–	3	–	4	1
February	9,755	672	6·89	9	–	–	–	–	1	–	2	–	–	2	–	1	2	–	–	–	1	–
March	9,844	715	7·26	13	–	–	1	2	–	–	–	–	–	2	1	1	–	1	1	1	2	1
April	9,505	813	8·55	19	–	2	1	–	1	1	3	–	–	1	2	–	–	3	–	1	4	–
May	9,691	860	8·87	14	–	–	1	–	–	2	1	1	–	1	–	2	1	1	3	–	1	–
June	9,644	826	8·56	12	–	1	–	–	–	–	2	–	–	2	–	5	1	–	–	–	1	–
July	9,625	849	8·82	15	–	1	–	1	2	1	3	–	–	1	–	3	1	–	–	–	2	–
August	9,602	893	9·30	21	–	4	–	1	2	–	6	–	1	3	–	1	1	–	1	–	1	–
September	9,609	840	8·74	22	–	1	–	–	5	1	2	–	1	4	1	1	1	1	2	–	2	–
October	9,468	683	7·21	14	–	–	–	–	1	1	2	1	1	1	1	1	–	–	2	–	3	–
November	9,201	538	5·85	8	–	1	–	–	–	–	–	–	1	1	–	2	1	2	–	–	–	–
December	10,337	564	5·46	13	–	–	–	–	–	–	–	–	2	2	1	2	–	–	2	–	4	–
						10	4	4	12	6	21	2	6	20	6	19	8	8	14	2	25	2
						Died per 1,000 of Average Strength.																
	9,655	739	7·65	169	17·50	1·04	·41	·41	1·24	·62	2·17	·21	·62	2·07	·62	1·97	·84	·84	1·45	·21	2·59	·21

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admisions.
Cholera	1	–	–	4	–	3	4	9	3	–	–	1	25	·26	40·00
Small-pox	5	2	12	11	7	–	–	–	–	–	–	–	37	·38	10·81
Intermittent Fevers	246	191	165	189	167	187	245	205	168	158	134	169	2,224		
Remittent Fevers	14	10	32	67	35	53	85	55	55	61	12	14	493	43·11	·53
Continued Fevers	35	40	104	460	200	129	103	138	114	64	30	29	1,446		
Dysentery	31	26	37	56	34	47	60	80	67	53	41	29	561	5·81	4·10
Diarrhœa	60	47	63	114	86	65	142	91	68	48	40	39	863	8·94	·70
Hepatitis	51	38	46	41	58	37	72	67	75	70	34	21	610	6·32	4·26
Ophthalmia	37	52	67	92	56	50	63	38	32	48	39	21	595	6·16	–
Rheumatism	78	61	46	84	59	61	80	61	59	66	37	71	763	7·90	–
Venereal Diseases	335	296	340	415	277	287	331	322	235	319	252	299	3,708	38·40	–
Phthisis Pulmonalis	2	6	3	8	2	4	5	8	3	4	4	2	51	·53	37·25
Heat Apoplexy	1	2	–	–	4	3	1	2	1	–	–	–	14	·15	57·14
Delirium Tremens	3	3	4	7	8	3	5	3	2	6	1	1	46	·47	17·40
Epilepsy	3	–	2	3	2	2	7	3	–	1	–	1	24	·25	–
Respiratory Diseases	69	84	82	60	42	49	54	47	41	43	44	45	660	6·84	2·12
Abscess and Ulcer	101	82	95	114	108	123	68	96	82	101	78	82	1,130	11·71	–
Wounds and Accidents	53	49	78	60	47	55	60	52	63	70	44	57	688	7·13	–
All other Diseases	114	87	120	195	165	132	182	153	140	139	86	94	1,607	16·64	·34
	1,239	1,076	1,296	1,980	1,357	1,290	1,567	1,430	1,208	1,251	876	975	15,545		
	Admitted per Cent. of Average Strength in each Month.														
	12·83	11·03	13·17	20·83	14·00	13·38	16·28	14·90	12·57	13·21	9·52	9·43	161·00		

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Cawnpore*, *Meerut*, and *Rohilcund* Districts during the Year 1861, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	9,625	787	8·17	17	–	–	2	1	1	1	2	–	1	3	–	–	1	4	–	1	–
February	9,916	830	8·37	10	–	–	2	–	–	–	1	–	–	2	1	1	–	–	2	–	1	–
March	9,282	864	9·31	9	–	1	5	1	–	–	–	–	1	1	–	–	–	–	–	–	–	–
April	10,712	1,204	11·24	28	–	2	6	1	–	5	2	–	4	1	–	2	2	–	1	–	2	–
May	10,764	1,183	11·00	36	–	8	3	2	1	4	–	–	3	1	2	–	7	1	2	–	1	1
June	10,758	1,136	10·56	29	–	8	2	–	–	4	–	–	1	2	1	2	3	1	3	–	1	1
July	10,651	1,197	11·24	157	–	129	1	1	1	4	2	1	8	2	2	3	1	–	–	1	1	–
August	10,446	1,313	12·57	106	–	64	–	1	7	8	10	–	5	1	1	3	3	–	1	–	2	–
September	10,307	1,262	12·24	40	–	4	–	–	3	7	10	–	4	–	–	4	1	1	1	1	4	–
October	10,237	1,117	10·91	36	–	2	–	2	–	2	8	3	4	2	3	3	–	1	1	1	4	–
November	9,701	961	9·91	22	–	2	–	1	1	–	3	2	3	1	1	4	–	–	–	1	3	–
December	8,819	808	9·16	18	–	–	–	–	2	–	3	3	–	3	2	2	–	–	1	–	2	–
						220	21	9	17	35	41	9	34	19	13	24	17	5	16	4	22	2
						Died per 1,000 of Average Strength.																
	10,102	1,055	10·44	508	50·30	21·78	2·08	·90	1·68	3·46	4·06	·90	3·36	1·88	1·29	2·37	1·68	·50	1·58	·40	2·17	·20

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	2	3	14	11	215	82	3	3	2	–	335	3·31	65·67
Small-pox	7	15	24	45	12	2	1	–	–	–	–	–	106	1·05	20·00
Intermittent Fevers	154	121	109	161	134	149	232	193	357	398	226	150	2,384		
Remittent Fevers	11	11	9	42	53	54	68	58	81	157	97	35	676	51·03	1·18
Continued Fevers	63	46	138	342	234	204	259	346	258	143	43	19	2,095		
Dysentery	31	29	24	53	44	45	88	169	108	68	71	38	768	7·60	6·51
Diarrhœa	49	41	78	140	104	89	605	410	172	111	79	50	1,928	19·08	1·76
Hepatitis	53	52	58	86	76	76	99	87	91	79	54	41	852	8·43	3·75
Ophthalmia	41	51	60	109	71	50	60	82	86	70	69	40	789	7·81	–
Rheumatism	82	56	56	78	72	79	108	82	99	97	88	69	966	9·66	–
Venereal Diseases	423	452	447	681	475	446	485	371	345	485	376	225	5,211	51·58	–
Phthisis Pulmonalis	5	12	4	3	4	7	13	7	12	6	11	9	93	·92	25·81
Heat Apoplexy	–	1	–	4	5	2	–	2	1	–	–	–	15	·15	100·00
Delirium Tremens	3	2	1	7	11	3	2	3	2	4	3	–	41	·41	12·20
Epilepsy	4	4	3	4	3	1	3	2	5	11	4	2	46	·46	–
Respiratory Diseases	79	68	85	123	70	65	72	51	44	59	62	46	824	8·16	1·94
Abscess and Ulcer	107	84	100	133	140	165	125	86	103	95	84	73	1,295	12·82	–
Wounds and Accidents	104	88	66	115	86	51	74	46	52	87	64	79	912	9·03	–
All other Diseases	130	133	108	177	223	157	222	195	173	183	135	102	1,938	19·18	·27
	1,346	1,266	1,372	2,306	1,831	1,656	2,731	2,272	1,992	2,056	1,468	978	21,274		
	Admitted per Cent. of Average Strength in each Month.														
	13·98	12·77	14·78	21·53	17·01	15·39	25·64	21·75	19·32	20·08	15·13	11·09	210·59		

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Agra* District and in *Central India* during the Year 1861, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	4,966	386	7·77	11	–	–	3	1	2	–	1	–	–	1	–	1	–	–	2	–	–	–
February	5,829	403	6·91	10	–	–	1	1	–	–	–	–	–	2	–	–	–	–	1	1	4	–
March	5,542	408	7·36	5	–	–	–	–	–	2	1	–	–	–	–	–	–	–	1	–	1	–
April	5,634	453	8·04	6	–	–	1	1	–	1	–	1	1	–	–	–	–	–	–	–	1	–
May	5,714	486	8·51	10	–	–	–	1	–	2	–	–	1	1	–	–	3	–	1	–	1	–
June	5,723	445	7·78	12	–	2	–	–	–	–	1	1	1	–	–	1	3	–	2	–	1	–
July	5,670	528	9·31	104	–	95	–	–	–	3	2	–	1	1	–	1	–	1	–	–	–	–
August	5,541	635	11·46	132	–	117	–	2	1	4	1	–	3	–	–	1	1	1	–	–	1	–
September	5,474	724	13·23	36	–	14	–	–	3	5	4	–	6	3	–	–	1	–	–	–	–	–
October	5,325	775	14·55	20	–	–	–	3	5	1	3	1	3	–	–	–	–	–	1	–	3	–
November	5,109	629	12·31	15	–	–	–	2	–	1	4	1	–	1	1	2	–	–	2	–	–	1
December	5,868	486	8·28	5	–	–	–	1	–	–	–	2	1	1	–	–	–	–	–	–	–	–
						228	5	12	11	19	17	6	17	10	2	5	8	2	10	1	12	1
						Died per 1,000 of Average Strength.																
	5,553	530	9·58	366	66·15	41·21	·90	2·17	1·99	3·44	3·07	1·08	3·07	1·80	·36	·90	1·44	·36	1·80	·18	2·17	·18

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died Per Cent. of Admissions.
Cholera	–	–	–	–	–	2	169	147	14	2	–	–	334	6·04	68·26
Small-pox	9	1	5	4	4	–	–	–	–	–	–	–	23	·41	21·74
Intermittent Fevers	207	114	129	282	144	199	408	643	1,091	1,576	1,125	728	6,646		
Remittent Fevers	3	9	2	27	15	12	66	175	147	93	23	2	574	156·95	·48
Continued Fevers	34	13	73	206	125	89	194	174	189	258	89	29	1,464		
Dysentery	15	11	8	15	10	15	33	53	58	46	24	30	318	5·75	7·23
Diarrhœa	55	31	39	72	63	78	225	268	125	84	34	22	1,096	19·81	1·55
Hepatitis	22	19	20	25	16	19	26	24	16	25	17	15	244	4·41	4·92
Ophthalmia	55	49	47	62	29	25	25	33	30	26	7	12	400	7·23	–
Rheumatism	58	40	49	32	33	44	43	42	44	55	43	48	531	9·60	–
Venereal Diseases	178	211	185	227	188	160	191	104	100	129	108	152	1,933	34·94	–
Phthisis Pulmonalis	4	1	–	–	1	3	3	2	6	3	3	1	27	·49	18·52
Heat Apoplexy	–	–	–	3	4	5	2	2	1	–	–	–	17	·31	47·06
Delirium Tremens	–	2	–	1	1	1	4	3	1	1	2	1	17	·31	11·80
Epilepsy	1	2	1	4	2	2	6	1	2	1	–	1	23	·41	–
Respiratory Diseases	62	51	47	60	46	41	41	27	32	40	52	39	538	9·72	1·86
Abscess and Ulcer	25	65	33	51	41	61	44	40	23	33	29	25	470	8·49	–
Wounds and Accidents	40	32	51	71	51	28	41	20	24	37	30	44	469	8·47	–
All other Diseases	79	81	76	127	136	111	158	119	70	98	87	61	1,203	21·74	·27
	847	732	765	1,269	909	895	1,679	1,877	1,973	2,507	1,673	1,201	16,327		
	Admitted per Cent. of Average Strength in each Month.														
	17·06	12·56	13·80	22·52	15·91	15·64	29·61	33·88	36·04	47·08	32·74	20·47	295·08		

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Punjab* during the Year 1861, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January -	14,289	688	4·81	11		–	4	–	–	1	1	–	–	1	1	–	–	–	4	–	–	–
February -	15,474	805	5·20	16		–	1	–	–	1	1	2	–	2	2	–	–	–	4	–	3	–
March -	15,718	875	5·56	10		–	3	–	–	1	1	–	–	1	1	–	–	–	1	1	1	–
April -	16,593	1,039	6·26	19		–	–	–	–	2	1	–	1	1	4	3	1	–	2	3	1	–
May -	16,612	1,173	7·07	25		–	3	3	1	1	5	–	2	2	–	–	4	2	–	–	4	–
June -	16,625	1,149	6·91	26		–	2	1	1	1	2	–	2	–	–	3	5	–	3	2	3	1
July -	16,692	1,117	6·69	27		6	–	–	1	1	7	–	–	3	1	3	1	–	1	1	2	–
August -	16,592	1,203	7·25	495		473	1	1	–	2	3	–	5	1	1	2	4	–	–	1	2	–
September	16,156	1,384	8·56	125		94	–	1	2	6	1	1	4	5	–	2	6	–	–	–	3	–
October -	15,706	1,144	7·28	32		1	–	2	–	3	2	2	3	5	2	3	1	–	1	1	5	1
November	15,314	907	5·92	18		–	–	–	–	2	3	1	1	4	1	2	–	1	–	1	2	–
December	15,027	779	5·18	14		–	–	1	–	1	–	2	–	3	4	1	1	–	1	–	–	–
						574	13	9	5	21	27	8	16	28	17	19	23	3	17	10	26	2
						Died per 1,000 of Average Strength.																
	15,900	1,022	6·43	818	51·45	36·10	·82	·57	·31	1·32	1·70	·50	1·01	1·76	1·07	1·20	1·45	·19	1·07	·63	1·63	·12

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera - - - -	–	1	–	–	–	2	10	757	128	–	2	–	900	5·66	63·80
Small-pox - - - -	23	8	6	8	7	6	2	–	–	–	1	1	62	·39	21·00
Intermittent Fevers - -	275	166	214	368	330	319	506	445	1,228	1,538	901	719	7,009		
Remittent Fever - -	21	9	10	32	46	119	120	177	920	163	19	6	1,642	74·45	·29
Continued Fevers - -	42	71	110	385	437	305	395	491	497	313	108	32	3,186		
Dysentery - - - -	33	36	43	49	56	57	60	88	81	70	47	44	664	4·11	5·27
Diarrhœa - - - -	62	45	59	185	246	183	322	420	268	162	84	99	2,135	13·43	·75
Hepatitis - - - -	53	63	49	86	77	77	87	56	54	78	56	48	784	4·93	5·74
Ophthalmia - - -	65	71	93	140	62	55	56	57	54	85	35	88	861	5·42	–
Rheumatism - - -	113	89	118	131	94	108	150	72	59	82	67	87	1,170	7·36	–
Venereal Diseases - -	346	359	352	590	392	351	406	274	237	408	331	423	4,469	28·10	–
Phthisis Pulmonalis - -	7	2	6	5	9	8	11	10	4	6	5	4	77	·49	24·67
Heat Apoplexy - - -	–	–	–	1	6	11	10	7	9	1	–	–	45	·28	51·10
Delirium Tremens - -	5	1	1	2	4	7	6	4	2	6	4	3	45	·28	6·66
Epilepsy - - - -	3	2	1	2	4	4	4	7	4	3	2	3	39	·25	–
Respiratory Diseases - -	148	117	128	156	121	88	110	55	50	109	97	97	1,276	8·03	1·33
Abscess and Ulcer - -	96	141	93	150	188	204	250	147	135	131	110	116	1,761	11·08	–
Wounds and Accidents -	136	115	122	142	119	102	115	79	104	119	116	176	1,445	9·09	–
All other Diseases - -	174	173	168	254	269	236	263	261	203	197	152	165	2,515	15·82	·31
	1,602	1,469	1,573	2,686	2,467	2,242	2,883	3,407	4,037	3,471	2,137	2,111	30,085		
	Admitted per Cent. of Average Strength in each Month.														
	11·21	9·49	10·01	16·19	14·85	13·48	17·27	20·54	25·00	22·10	13·95	14·05	189·21		

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the European Troops serving in the various Provinces of the *Bengal* Presidency during the Year 1861.

DISEASES.	BENGAL PROPER. Average Strength - 3,689; Daily Sick per Cent. of Strength - - - 7·45; Admitted per Cent. of Strength - - - 209·30; Died per 1,000 of Strength— A. From Cholera - 6·51; B. From all Causes - 30·09			DINAPORE, BENARES, AND OUDE. Average Strength - 9,655; Daily Sick per Cent. of Strength - - - 7·65; Admitted per Cent. of Strength - - - 161·00; Died per 1,000 of Strength— A. From Cholera - 1·04; B. From all Causes 17·50			CAWNPORE AND MEERUT. Average Strength - 10,102; Daily Sick per Cent. of Strength - - - 10·44; Admitted per Cent. of Strength - - - 210·59; Died per 1,000 of Strength— A. From Cholera - 21·78; B. From all Causes 50·30			AGRA AND CENTRAL INDIA. Average Strength - - 5,533; Daily Sick per Cent. of Strength - - - 9·58; Admitted per Cent. of Strength - - - 295·08; Died per 1,000 of Strength— A. From Cholera - 41·21; B. From all Causes 66·15			PUNJAB. Average Strength - 15,900; Daily Sick per Cent. of Strength - - - 6·43; Admitted per Cent. of Strength - - - 189·21; Died per 1,000 of Strength— A. From Cholera - 36·10; B. From all Causes 51·45			BENGAL PRESIDENCY. Average Strength - 44,879; Daily Sick per Cent. of Strength - - - 8·20; Admitted per Cent. of Strength - - - 204·56; Died per 1,000 of Strength— A. From Cholera - 23·73; B. From all Causes 44·77		
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.
Cholera - - -	1·35	48.00	6·51	·26	40·00	1·04	3·31	65·67	21·78	6·04	68·26	41·21	5·66	63·80	36·10	3·71	64·04	23·73
Small-pox - - -	·11	–	–	·38	10·81	·41	1·05	20·00	2·08	·41	21·74	·90	·39	21·00	·82	·52	18·53	·96
Fevers - - - -	58·80	·73	4·61	43·11	·53	2·27	51·03	1·18	6·04	156·95	·48	7·60	74·45	·29	2·20	71·52	·55	3·07
Dysentery - - -	15·13	5·20	7·86	5·81	4·10	2·38	7·60	6·51	4·96	5·75	7·23	4·15	4·11	5·27	2·20	6·55	5·62	3 67
Diarrhœa - - -	25·59	·21	·54	8·94	·70	·62	19·08	1·76	3·36	19·81	1·55	3·07	13·43	·75	1·01	15·66	1·08	1·69
Hepatitis - - -	4·85	7·82	3·79	6·32	4·26	2·69	8.43	3·75	3·17	4·41	4·92	2·16	4·93	5·74	2·83	6·04	4·80	2·89
Ophthalmia - - -	6·97	–	–	6·16	–	–	7·81	–	–	7·23	–	–	5·42	–	–	6·57	–	–
Rheumatism - - -	10·00	–	–	7·90	–	–	9·66	–	–	9·60	–	–	7·36	–	–	8·58	–	–
Venereal Diseases - -	29·68	–	–	38·40	–	–	51 58	–	–	34·94	–	–	28·10	–	–	36·91	–	–
Phthisis Pulmonalis -	·65	25·00	1·62	·53	37·25	1·97	·92	25·81	2·37	·49	18·52	·90	·49	24·67	1·20	·68	27·03	1·85
Heat Apoplexy - -	·19	57·14	1·08	·15	57·14	·84	·15	100·00	1·68	·31	47·06	1·44	·28	51·10	1·45	·22	61·22	1·34
Delirium Tremens - -	1·11	4·90	·54	·47	17·40	·84	·41	12·20	·50	·31	11·80	·36	·28	6·66	·19	·46	9·75	·45
Epilepsy - - -	·68	–	–	·25	–	–	·46	–	–	·41	–	–	·25	–	–	·36	–	–
Respiratory Diseases -	7·67	1·06	·81	6·84	2·12	1·45	8·16	1·94	1·58	9·72	1·86	1·60	8·03	1·33	1·07	8·05	1·69	1·36
Abscess and Ulcer - -	12·09	–	–	11·71	–	–	12·82	–	–	8·49	–	–	11·08	–	–	11·46	–	–
Wounds and Accidents -	9·30	–	–	7·13	–	–	9·03	–	–	8·47	–	–	9 09	–	–	8·65	–	–
All other Diseases - -	25·13	·28	2·71	16·64	·34	3·01	19·18	·27	2·77	21·74	·27	2·53	15·82	·31	2·38	18·63	·31	2·86
	200·30	–	30·09	161·00	–	17·50	210·59	–	50·30	295·08	–	66·15	189·21	–	51·45	204·56	–	44·77

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the GENERAL STATISTICS of SICKNESS and MORTALITY in the Principal MILITARY STATIONS of the *Bengal* Presidency.

STATIONS.	Period of Observation.	Average Strength during Period of Observation.	DAILY SICK PER CENT. OF AVERAGE STRENGTH IN EACH MONTH.											Daily Sick per Cent. of Average Strength for the Year.	Number of Admissions into Hospital.	Admitted per Cent. of Average Strength.	NUMBER OF DEATHS.		DIED PER 1,000 OF AVERAGE STRENGTH.		
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				A. Cholera.	B. All other Causes.	A. Cholera.	B. All other Causes.	C. All Causes.
Fort William		1,056	6·56	6·31	8·47	6·90	7·66	8·92	8·84	9·67	9·16	9·13	7·62	6·26	7·95	2,473	234·20	9	·4	8·52	13·26	21·78
Dum-Dum		803	6·69	6·76	6·21	6·14	8·68	11·90	9·56	7·53	7·29	6·88	5·34	5·85	7·22	1,989	247·70	4	20	4·98	25·02	30·00
Barrackpore		1,141	8 72	8·95	8·20	8·44	7·49	8·14	12·40	11·76	9·79	6·73	7·53	4·67	8·67	2,012	176·33	6	35	5·26	30·67	35·93
Berhampore		275	9·19	8 04	5·83	4·31	3·32	4·39	5·05	4·32	4·45	7·19	6·96	6·99	6·00	511	185·82	–	6	–	21·82	21·82
Sikkim Field Force		562	3·31	5·00	7·53	6·30	6·61	7·75	10·67	7·40	7·77	8·46	5·36	4·00	6·76	585	104·10	–	19	–	33·81	33·81
Hazareebaugh		846	10·77	17·74	17·81	17·00	14·10	14·47	15·45	12·42	9·28	7·45	7·48	5·75	12·53	2,142	253·20	–	15	–	17·73	17·73
Dinapore		783	4·16	6·00	3·80	4·75	5·48	5·60	7·77	9·15	9·30	6·44	4·55	5·06	6·00	1,435	183·27	2	16	2·55	20·45	23·00
Benares		737	6·36	7·00	8·01	9·02	12·73	10·60	9·21	11·41	12·20	10·07	7·00	4·33	8·68	1,711	232·16	2	13	2·71	17·64	20·35
,, Raj Ghat		160	7·61	7·61	6·52	11·80	12·26	11·04	12·27	13·61	10·00	10·00	11·11	4·00	10·00	623	389·40	2	7	12·50	43·75	56·25
Goruckpore		907	6·72	5·72	7·40	9·42	9·37	9 85	9·21	9·22	9·68	7·85	6·37	6·19	8·16	1,501	165·49	–	18	–	19·85	19·85
Gondah		921	5·26	3·59	4·51	8·00	9·11	9·01	9·46	10·98	9·83	6·37	4·24	4·60	7·16	967	105·00	–	17	–	18·46	18·46
Fyzabad		1,114	6·18	8·00	7·64	8·30	8·00	9·00	8·26	9·51	8·76	7·43	6·05	5·87	7·72	1,854	166·43	1	4	·89	3·60	4·49
Roy Bareilly		648	2·18	3·05	2·90	4·15	5·15	2·94	3·19	5·54	5·00	4·13	4·54	4·79	3·85	546	84·26	–	8	–	12·34	12·34
Lucknow		2,215	6·96	6·84	6·14	7·00	7·51	7·22	6·96	8·33	7·93	6·81	6·00	6·50	7·01	3,089	139·45	3	28	1·35	12·65	14·00
Seetapore		682	7·22	6·61	9·35	12·06	11·25	9·00	9·43	8·00	7·77	6·91	6·10	6·08	8·21	1,007	147·65	–	10	–	14·66	14·66
Allahabad*	10 months, March to December	1,277	6·16	6·00	8·30	10·67	10·95	9·41	9·87	10·93	13·14	11·67	8·89	9·01	9·38	3,127	244·87	21	40	16·44	31·33	47·77
Cawnpore		1,230	8·81	8·82	7·88	10 70	11·09	10·20	11 66	13·22	10·72	9·29	8.76	9·14	10·00	2,604	211·70	35	39	28·45	31·71	60·16
Futtehgurh	9 months, April to December	434	–	–	6·50	5·50	7·57	8·04	10·57	8·10	8·35	9·28	7·50	6·48	7·83	657	131·57	5	5	11·52	11·52	23·04
Bareilly		1,188	4·79	5·15	5·91	9·57	8·21	8·21	9·69	8·67	9·57	8·25	6·91	5·87	7·60	1,853	155·97	5	12	4·21	10·10	14·31
Shahjehanpore	9 months, April to December	525	7·22	7·36	8·00	12·76	9·60	6·21	7·00	6·82	7·40	7·22	7·17	5·53	7·75	700	86·10	–	4	–	7·62	7·62
Moradabad		459	–	–	–	13·19	13·46	12·40	11·61	11·66	11·71	11·52	10·76	8·41	11·76	537	117·12	2	11	4·36	23·96	28·32
Roorkee		588	4·70	4·14	4·40	5·70	8·61	8·79	6·82	9·50	8·74	7·01	5·24	5·73	6·62	1,076	183·00	1	4	1·70	6·80	8·50
Meerut		2,535	6·14	6·78	7·92	9 50	7·66	8·30	9·34	12·81	11·84	10·42	8·92	8·26	9·02	4,968	195·98	87	63	34·32	24·85	59·17
Delhi		1,127	14·03	13·12	12·63	10·74	13·62	12·80	12·17	12·46	13·36	13·00	13·35	7·96	12·19	2,866	256·10	50	57	44·36	50·58	94·94
Muttra		347	8 78	9·73	8·33	9·94	10·22	9·30	11·65	9·34	8·48	7·23	6·46	5·92	8·80	829	236·02	4	4	11·53	11·53	23·06
Agra		1,220	7·09	6·71	6·00	5·30	8·81	8·61	11·93	17·07	23·92	27·00	19·65	10·68	12·23	4,489	367·94	69	35	56·56	28·69	85·25
Morar		1,106	10 00	7·33	7·81	9·00	7·45	6·08	6·00	9·48	8·78	8·04	9·70	7·18	8·02	3,179	287·43	152	46	137·43	41·59	179·02
Jhansi		623	5·42	7·84	7·37	8 44	7·87	6·90	10·83	13·14	14·06	16·72	17·26	10·90	10·55	1,921	308·35	–	20	–	32·10	32·10
Nowgong		240	5·07	5·20	5·80	6·60	8·53	8·14	7·40	6·03	7·40	9·10	4·66	4·79	6·66	457	190·42	–	2	–	8·33	8·33
Saugor		860	7·55	6·36	8·36	9·94	9·70	8·80	9·70	10·17	11·63	13·50	7·45	5·61	9·08	2,125	247·10	–	8	–	9·30	9·30
Nagode		203	7·35	7·37	7·60	8·02	7·50	8·37	9·43	8·50	9·55	7·00	7·54	4·64	7·72	451	222·16	–	2	–	10·00	10·00
Jubbulpore		861	8·63	7·00	7·84	7·72	8·61	9·00	10·33	9·54	8 90	10·47	10·64	7·37	8·82	2,354	273·40	–	16	–	–	18·58
Umballa		1,820	3·56	3·70	5·10	10·77	11·84	11·14	10·75	9·63	11·42	6·91	5·21	4·50	8·00	4,637	254·80	53	30	29·12	16·48	45·60
Dugshaie	7 months, April to October	1,055	–	–	–	4·74	4·16	3·87	4·82	5·19	5·02	3·23	–	–	4·46	433	36·02	–	9	–	8·53	8·53
Subathoo	8 months, April to November	1,019	–	–	–	7·82	10·21	10·41	8·94	7·80	6·60	6·06	5·44	–	7·96	1,161	102·84	–	19	–	18·62	18·62
Jullundur		1,015	3·05	5·43	5·00	3·63	4·44	3·90	3·00	2·60	3·31	3·51	4·18	4·83	3·92	886	87·30	–	11	–	10·84	10·84
Ferozepore		889	5·75	8·46	8·19	6·61	7·33	4·90	5·24	5·78	7·03	7·00	6·10	4·45	6·32	1,509	169·64	1	9	1·12	10·13	11·25
Mecan Meer		1,700	6·00	5·22	5·63	5·00	8·00	7·75	6·52	8·52	11·72	10·05	8·04	5·27	7·30	4,011	235·95	450	45	245·63	45·54	291·17
Umritsur and Govindghur		481	4·66	4·41	4·25	5·20	5·02	5·03	5·38	7·42	12·13	8·47	5·45	4·00	6·03	1,038	215·80	41	15	85·24	31·18	116·42
Mooltan		734	8·17	9·14	9·26	7·47	8·00	8·62	10·72	10·09	8·57	9·32	8·37	5·70	8·73	1,537	209·40	–	13	–	17·71	17·71
Sealcote		1,495	6·51	7·70	6·44	6·72	7·15	8·00	7·74	8·07	9·31	8·57	6·27	5·21	7·32	2,840	190·00	–	13	–	8·70	8·70
Rawul Pindee		1,846	5·33	5·67	5·77	6·04	5·70	5·54	5·71	6·12	6·11	6·81	5·00	4·55	5·73	2,785	150·87	–	22	–	11·90	11·90
Attock	11 months, January to Nov.	184	3·59	3·33	–	4·81	5·90	5·00	3·52	6·03	7·61	4·10	3·68	6·83	4·74	364	197·83	–	3	–	16·30	16·30
Nowshera	7 months, May to November	805	3·93	4·40	3·64	3·72	4·31	4·51	4·51	5·62	6·63	6·45	9·36	–	5·07	1,321	164·10	–	5	–	6·21	6·21
Campbellpore		339	–	–	–	–	2·65	4·00	4·71	6·46	4·14	3·14	2·70	–	3·83	254	74·92	–	2	–	6·00	6·00
Peshawur		1,955	4·24	4·46	5·54	4·88	6·41	6·38	6·57	8·09	15·31	12·40	7·70	7·00	7·06	5,678	290·43	–	24	–	12·27	12·27

* Exclusive of General Hospital.

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the Ratio in which the Principal Diseases have contributed to make up the Admission Rate of the Year in the Chief Military Stations of the *Bengal* Presidency.

STATIONS.	Average Strength.	ADMITTED INTO HOSPITAL PER CENT. OF AVERAGE STRENGTH.											Admitted per Cent. of Average Strength from all Causes.
		Cholera.	Heat Apoplexy.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Diseases of the Respiratory Organs.	All other Causes.	
Fort William	1,056	1·70	–	63·45	10·99	30·59	5·50	11·84	12·60	39·20	6·53	51·80	234·20
Dum-Dum	803	1·37	·25	65·13	17·68	29·52	5·60	7·85	12 33	31·13	11·83	65·01	247·70
Barrackpore	1,141	1·14	·26	44·34	22·88	25·77	4·47	1·49	8·85	23·66	7·10	36·37	176·33
Raneegunge (9 months)	186	3·23	1·08	26·35	7·53	8·60	2·69	6·45	4·30	46·77	3·23	42·47	152·70
Berhampore	275	–	–	119·28	2·55	8·00	3·63	12·36	3·63	4·73	4·36	27·25	185·82
Sikkim Field Force	562	–	·18	24·20	4·80	10·14	4·99	1·60	8·90	14·95	8·54	25·80	104·10
Hazareebaugh	846	·35	·12	98·58	3·43	16·08	3·31	9·81	9·57	63·48	10 76	37·71	253·20
Dinapore	783	·38	·13	48·79	7·28	12·01	4·72	6·90	4·72	52·87	9·97	35·50	183·27
Benares	737	·13	·41	72·73	10·72	6·38	14·38	6·11	8·41	59·70	6·51	46·68	232·16
„ Raj Ghat	160	1·88	·63	196·88	14·37	21·88	10·63	2·50	9·38	58·12	11·88	61·25	389·40
Goruckpore	907	–	–	47·08	11·02	8·82	2·76	4·63	10·48	38·92	6·06	35·72	165·49
Gondah	921	·11	–	14·44	3·80	5·10	8·15	2·82	7·60	22·70	5·21	35·07	105·00
Fyzabad	1,114	·45	–	28·63	3·41	8·89	7·81	9·16	6·10	46·59	8·89	46·50	166·43
Roy Bareilly	648	–	–	22·07	2·01	3·40	2·16	3·24	4·78	26·08	2·62	17·90	84·26
Lucknow	2,215	·40	·18	34·63	5·78	8·39	6·91	6.09	7·13	26·73	4·20	39·01	139·45
Seetapore	682	–	·29	21·55	4·40	7·48	4·84	9·53	13·05	42·67	8 94	34·90	147·65
Allahabad	1,277	2·51	·16	79·80	6·97	31·09	14·95	7·67	9·01	39·62	13·31	39·78	244·87
Cawnpore	1,230	3·90	·08	54·23	9·02	16·91	4·23	6·99	8·13	54·80	4·96	48·45	211·70
Futtehgurh (10 months)	434	2·53	·23	21·20	3·91	5·30	4·38	5·30	1 15	48·62	3·69	35·26	131·57
Shahjehanpore (9 „)	525	–	–	19·43	·95	3·05	1·90	4·57	4·00	27·62	2·10	22·48	86·10
Bareilly	1,188	·34	·08	30·64	4·54	8·08	6·73	7·83	10·44	51·09	7·16	29·04	155·97
Moradabad (9 months)	459	·44	–	18·84	2·83	5·45	3·50	6·32	13·07	30·72	5·23	30·72	117·12
Roorkee	588	·17	·17	44·90	7·14	13·95	4·93	6 80	7·82	37·59	6·30	53·23	183·00
Meerut	2,535	4·65	·32	42·68	6·50	22·37	6·24	4·38	8·52	51·44	9·04	39·84	195·98
Delhi	1,127	7·45	–	76·66	13·66	24·76	5·77	11·98	6·30	65·60	4·52	39·40	256·10
Muttra	347	5·48	–	55·32	2·60	15·85	18·16	3·46	7·20	48·99	6·34	75·50	238·90
Agra	1,220	9·34	·41	217·62	9 59	31·07	4·26	3·36	6·72	43 77	11·64	30·16	367·94
Morar	1,106	18 99	·45	148·73	2·90	23·60	2·62	4·52	4·43	30·11	10·03	41·05	287·43
Gwalior Fortress	244	3·28	–	42·62	6·98	8·20	3·28	13·92	7·37	21·72	1·64	26·64	135·65
Jhansi	623	–	·80	181·22	12·20	13 80	6·26	11·55	10·44	27·30	10·11	34·67	308·35
Lullutpore (11 months)	192	–	–	312·50	8·33	25·52	5·21	23·44	7·29	36·98	11·98	100·00	531·25
Nowgong	240	–	·83	96·25	2·08	10·83	5·83	5·00	4·59	24·59	4·17	36·25	190·42
Saugor	860	–	–	94·30	3 95	10·35	4 77	9·89	14·54	49·07	8·37	51·86	247·10
Nagode	203	·50	–	128·57	·50	5·42	1·97	5·42	10 35	29·51	5·92	34·00	222·16
Jubbulpore	861	·12	–	144·94	2·33	20·55	5·46	5·81	16·92	26·83	11·73	38·91	273·40
Umballa	1,820	3·90	·06	99·45	5·50	25·60	3·35	8·35	9·23	49·51	7·59	42·26	254·80
Dugshaie (7 months)	1,055	–	–	5·12	·67	7 58	2·08	2·28	1·90	5·98	3·12	7·29	36·02
Suhathoo (8 „)	1,019	–	–	15·31	6·97	26·20	3·33	8·24	5·30	13·15	3·83	20·51	102·84
Jullundur	1,015	·09	–	16·17	1·48	3·74	1·87	2·96	1·87	34·69	4·04	20·39	87·30
Ferozepore	889	·45	·11	43·42	1·69	11·14	3·26	2·70	13·50	46.34	7·76	39·27	169·64
Meean Meer	1,700	42·65	·82	73·77	4·65	16·88	5·77	7·82	5·76	23·89	8·47	45·47	235·95
Govindghur & Umritsur	481	10·39	·20	92·31	6·03	21·21	3·33	3·75	11·23	24·74	6·44	36·17	215·80
Mooltan	731	–	1·77	56·54	6·40	8·59	13·21	4·63	7·22	41·56	8·04	61·44	209·40
Sealkote	1,495	·07	·12	81·87	1·54	4·28	4 21	8·00	4·55	33·79	10·37	41·20	190·00
Rawul Pindee	1,846	–	–	44·36	1·57	7·15	7·21	2·82	11 81	21·45	14·68	39·82	150·87
Campbellpore (7 months)	339	–	–	22·13	2·07	5·01	1·18	·30	2·36	15·34	3·83	22·70	74·92
Attock	184	–	–	97·82	15·22	9·80	11·95	1·63	5·98	14.13	2·71	38·59	197·83
Nowshera (11 months)	805	–	·37	72·92	8·70	6·58	4·97	2·86	7·58	11·55	5·59	42·98	164·10
Peshawur	1,955	·10	·36	192·12	5·52	15·75	2·81	2·81	5·52	22·61	7·93	31·90	290·43

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the Prevalence of SMALL POX in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the period of Occupation.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.				
Presidency Hospitals	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fort William	1,056	4	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–
Dum-Dum	803	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Barrackpore	1,141	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Chinsurah Depôt	204	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Raneegunge Depôt	140	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Berhampore	275	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Debroogurh	70	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3,689	4	–	–	–	–	–	–	–	–	–	–	–	4	·11	–	–
Darjeeling Depôt	80	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sikkim Field Force	562	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hazareebaugh	846	2	–	2	2	–	–	–	–	–	–	–	–	6	–	–	–
Dinapore	783	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–
Benares	737	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ Raj Ghat	160	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Goruckpore	907	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Gondah	921	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–
Fyzabad	1,114	1	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–
Rae Bareilly	648	–	–	–	3	1	–	–	–	–	–	–	–	4	–	1	–
Lucknow	2,215	–	–	4	4	5	–	–	–	–	–	–	–	13	–	1	–
Seetapore	682	2	2	5	1	1	–	–	–	–	–	–	–	11	–	1	–
	9,655	5	2	12	11	7	–	–	–	–	–	–	–	37	·38	4	·41
Allahabad	1,277	–	2	10	3	2	–	–	–	–	–	–	–	17	–	4	–
„ General Hospital	113	–	6	1	–	2	–	–	–	–	–	–	–	9	–	1	–
Cawnpore	1,230	2	2	5	14	6	2	1	–	–	–	–	–	32	–	5	–
Futtehgurh (10 months)	434	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bareilly	1,188	–	–	1	3	–	–	–	–	–	–	–	–	4	–	1	–
Shahjehanpore (9 months)	525	–	1	–	2	–	–	–	–	–	–	–	–	3	–	–	–
Moradabad (9 months)	459	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nynee Tal Depôt	310	–	–	–	3	–	–	–	–	–	–	–	–	3	–	2	–
Landour Depôt	132	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Roorkee	588	–	–	–	2	–	–	–	–	–	–	–	–	2	–	–	–
Meerut	2,535	5	4	4	12	1	–	–	–	–	–	–	–	26	–	7	–
Delhi	1,127	–	–	3	6	1	–	–	–	–	–	–	–	10	–	1	–
Muttra	347	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	10,102	7	15	24	45	12	2	1	–	–	–	–	–	106	1·05	21	2·08
Agra	1,220	–	1	3	4	2	–	–	–	–	–	–	–	10	–	1	–
Morar	1,106	5	–	–	–	–	–	–	–	–	–	–	–	5	–	3	–
Gwalior Citadel	244	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Jhansi	623	4	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–
Lullutpore	176	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowgong	240	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Saugor	860	–	–	1	–	2	–	–	–	–	–	–	–	3	–	–	–
Nagode	203	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–
Jubbulpore	861	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5,533	9	1	5	4	4	–	–	–	–	–	–	–	23	·41	5	·90
Umballa	1,820	13	3	5	3	1	–	–	–	–	–	–	–	25	–	5	–
Dugshaie (7 months)	1,055	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subathoo (8 months)	1,019	2	–	–	1	–	–	–	–	–	–	–	–	3	–	–	–
Kussowlie Depôt	223	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jutogh	35	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phillour	125	2	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–
Jullundur	1,015	–	1	–	–	1	–	–	–	–	–	–	–	2	–	1	–
Ferozepore	889	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meean Meer	1,700	3	–	–	3	3	2	–	–	–	–	–	–	11	–	3	·7
Lahore Citadel	149	–	–	–	–	2	–	–	–	–	–	–	–	2	–	–	–
Umritsur and Govindghur	481	–	–	–	1	–	1	1	–	–	–	–	–	3	–	–	–
Mooltan	734	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Dera Ismael Khan	106	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sealkote	1,495	1	2	1	–	–	1	–	–	–	–	–	–	5	–	1	–
Kangra	98	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawul Pindee	1,846	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Attock	184	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowshera (11 months)	805	1	2	–	–	–	1	–	–	–	–	–	–	4	–	2	–
Campbellpore (7 months)	339	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peshawur	1,955	–	–	–	–	–	1	1	–	–	–	1	1	4	–	–	–
Murree Depôt	229	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	15,900	23	8	6	8	7	6	2	–	–	–	1	1	62	·39	13	·82
BENGAL PRESIDENCY	44,879	48	26	47	68	30	8	3	–	–	–	1	1	232	·52	43	·96

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the PREVALENCE of CHOLERA in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the Period of Occupation.	Number of Admissions into Hospital in each Month.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died Per 1,000, of Average Strength.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.				
Presidency Hospitals	—	1	1	5	7	4	—	—	—	—	1	—	—	19	—	9	—
Fort William	1,056	3	2	8	2	3	—	—	—	—	—	—	—	18	—	9	—
Dum-Dum	803	—	—	5	6	—	—	—	—	—	—	—	—	11	—	4	—
Barrackpore	1,141	1	1	3	1	3	3	1	—	—	—	—	—	13	—	6	—
Chinsurah Depôt	204	—	—	—	2	—	—	—	—	—	—	—	—	2	—	2	—
Raneegunge Depôt	140	—	—	—	4	—	—	—	—	—	2	—	—	6	—	3	—
Berhampore	275	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Debroogurh	70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3,689	4	3	16	15	6	3	1	—	—	2	—	—	50	1·35	24	6·51
Darjeeling Depôt	80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sikkim Field Force	562	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hazareebaugh	846	1	—	—	—	—	—	2	—	—	—	—	—	3	—	—	—
Dinapore	783	—	—	—	2	—	—	—	—	—	—	—	1	3	—	2	—
Benares	737	—	—	—	—	—	—	—	1	—	—	—	—	1	—	1	—
Benares Rajghat	160	—	—	—	—	—	—	—	2	1	—	—	—	3	—	3	—
Goruckpore	907	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gondah	921	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	—
Fyzabad	1,114	—	—	—	—	—	3	—	—	2	—	—	—	5	—	1	—
Rae Bareilly	648	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lucknow	2,215	—	—	—	1	—	—	2	6	—	—	—	—	9	—	3	—
Seetapore	682	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	9,655	1	—	—	4	—	3	4	9	3	—	—	1	25	·26	10	1·04
Allahabad	1,277	—	—	—	—	4	2	20	4	—	2	—	—	32	—	21	—
Allahabad, General Hospital	113	—	—	—	1	1	—	5	8	—	—	1	—	16	—	10	—
Cawnpore	1,230	—	—	1	—	8	9	10	19	—	—	1	—	48	—	35	—
Futtehgurh (10 months)	434	—	—	—	—	—	—	—	11	—	—	—	—	11	—	5	—
Bareilly	1,188	—	—	—	—	—	—	—	1	3	—	—	—	4	—	5	—
Shahjehanpore (9 months)	525	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Moradabad (9 months)	459	—	—	—	—	—	—	1	1	—	—	—	—	2	—	2	—
Nynee Tal	310	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landour	132	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Roorkee	588	—	—	—	—	—	—	—	1	—	—	—	—	1	—	1	—
Meerut	2,535	—	—	—	1	1	—	88	27	—	1	—	—	118	—	87	—
Delhi	1,127	—	—	1	1	—	—	81	1	—	—	—	—	84	—	50	—
Muttra	347	—	—	—	—	—	—	10	9	—	—	—	—	19	—	4	—
	10,102	—	—	2	3	14	11	215	82	3	3	2	—	335	3·31	220	21·78
Agra	1,220	—	—	—	—	—	1	103	8	1	1	—	—	114	—	69	—
Morar	1,105	—	—	—	—	—	—	64	133	13	—	—	—	210	—	152	—
Gwalior Citadel	244	—	—	—	—	—	—	2	6	—	—	—	—	8	—	7	—
Jhansi	623	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lullutpore	176	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nowgong	240	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Saugor	860	—	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—
Nagode	203	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—	—
Jubbulpore	861	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	5,533	—	—	—	—	—	2	169	147	14	2	—	—	334	6·04	228	41·21
Umballa	1,820	—	—	—	—	—	—	10	57	4	—	—	—	71	—	53	—
Dugshaie (7 months)	1,055	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subathoo (8 months)	1,019	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Kussowlie	223	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Jutogh	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Phillour	125	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Jullundur	1,015	—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Ferozepore	889	—	—	—	—	—	—	—	—	2	—	2	—	4	—	1	—
Meean Meer	1,700	—	—	—	—	—	—	—	661	64	—	—	—	725	—	450	—
Lahore Citadel	149	—	—	—	—	—	—	—	39	7	—	—	—	46	—	29	—
Umritsur and Govindghur	481	—	—	—	—	—	—	—	—	50	—	—	—	50	—	41	—
Mooltan	734	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dera Ismael Khan	106	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sealkote	1,494	—	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—
Kangra	98	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rawul Pindee	1,846	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Attock	184	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nowshera (11 months)	805	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Campbellpore (7 months)	339	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Peshawur	1,955	—	—	—	—	—	1	—	—	1	—	—	—	2	—	—	—
Murree	229	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	15,900	—	1	—	—	—	2	10	757	128	—	2	—	900	5·66	574	36·10
BENGAL PRESIDENCY	44,879	6	5	23	29	24	21	399	995	148	8	4	1	1,663	3·71	1,065	23·73

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the MORTALITY in each STATION, the CAUSES of DEATH, and the Ratio of DEATHS to STRENGTH.

STATIONS.	Average Strength for the Period of Occupation.	Causes of Deaths in Hospital.																	Number of Deaths.	Died per 1,000 of Average Strength.		
		Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.		A. Cholera.	B. Other Causes.	C. All Causes.
Presidency Hospitals	-	9	-	-	-	1	5	-	1	-	1	10	-	-	1	1	8	-	37	-	-	-
Fort William	1,056	9	-	-	1	-	4	-	-	4	1	1	-	-	1	1	1	-	23	8·52	13·26	21·78
Dum-Dum	803	4	-	-	3	3	-	1	2	3	-	2	2	2	-	-	2	-	24	4·98	25·02	30·00
Barrackpore	1,141	6	-	-	-	2	14	6	-	1	1	3	2	-	1	1	4	-	41	5·26	30·67	35·93
Chinsurah Depôt	204	2	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	4	-	-	-
Raneegunge Depôt	140	3	-	-	-	1	2	-	-	2	-	-	-	-	-	1	-	-	9	16·13	32·26	48·39
Berhampore	275	-	-	-	-	3	1	-	-	1	1	-	-	-	-	-	-	-	6	-	21·82	21·82
Debrooghur	70	-	-	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-	4	-	52·63	52·63
	3,689	24	-	-	7	10	22	7	2	11	3	6	4	2	3	3	7	-	111	6·51	23·58	30·09
Darjeeling Depôt	80	-	-	-	-	-	-	-	-	1	-	1	1	-	1	-	-	-	4	-	-	-
Darjeeling and Sikkim Field Force.	562	-	-	-	-	1	3	-	-	4	-	3	-	1	3	-	3	1	19	-	33·81	33·81
Hazareebaugh	846	-	-	1	5	-	1	-	-	3	-	1	-	-	-	-	4	-	15	-	17·73	17·73
Dinapore	783	2	-	-	-	2	2	-	4	3	-	1	2	1	-	-	1	-	18	2·55	20·45	23·00
Benares	737	2	-	-	1	-	3	1	1	1	1	2	1	1	1	-	-	-	15	2·71	17·64	20·35
Benares Rajghat	160	2	-	-	-	-	2	-	-	-	-	-	1	2	1	1	-	-	9	12·50	43·75	56·25
Goruckpore	907	-	-	-	-	1	4	-	-	2	-	1	1	-	4	-	5	-	18	-	19·85	19·85
Gondah	921	-	-	-	4	-	1	-	1	1	-	1	-	1	4	-	3	1	17	-	18·46	18·46
Fyzabad	1,114	1	1	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	5	·89	3·60	4·49
Rae Bareilly	648	-	1	1	2	-	1	-	-	1	1	-	-	-	-	1	-	-	8	-	12·34	12·34
Lucknow	2,215	3	1	1	-	2	2	-	-	4	1	8	1	-	-	8	-	-	31	1·35	12·65	14·00
Seetapore	682	-	1	1	-	-	2	1	-	-	1	-	1	2	-	1	-	-	10	-	14·66	14·66
	9,655	10	4	4	12	6	21	2	6	20	6	19	8	8	14	2	25	2	169	1·04	16·46	17·50
Allahabad	1,277	21	4	-	1	9	2	2	2	4	2	4	4	1	-	1	3	1	61	16·44	31·33	47·77
Allahabad General Hospital	113	10	1	-	-	1	1	3	-	-	2	1	1	-	-	-	5	-	25	-	-	-
Cawnpore	1,230	35	5	4	3	-	10	1	6	3	-	2	-	1	2	-	2	-	74	28·45	31·71	60·16
Futtehgurh (10 months)	434	5	-	-	-	-	1	-	-	1	-	-	1	-	2	-	-	-	10	11·52	11·52	23·04
Bareilly	1,188	5	1	1	1	-	1	-	1	3	-	-	2	1	-	-	1	-	17	4·21	10·10	14·31
Shahjehanpore (9 months)	525	-	-	-	-	1	-	-	-	1	-	1	-	-	1	-	-	-	4	-	7·62	7·62
Moradabad (9 months)	459	2	-	-	-	-	-	1	-	2	-	2	1	-	2	1	2	-	13	4·36	23·96	28·32
Nynee Tal (8 months)	416	-	2	-	-	-	-	-	2	-	-	2	-	-	3	-	4	-	13	-	-	-
Landour (8 months)	207	-	-	2	-	-	-	1	5	-	7	2	-	-	2	1	1	-	21	-	-	-
Roorkee	588	1	-	-	1	1	1	-	-	-	-	-	-	-	-	-	1	-	5	1·70	6·80	8·50
Meerut	2,535	87	7	-	4	16	5	1	6	4	2	6	5	1	3	1	1	1	150	34·32	24·85	59·17
Delhi	1,127	50	1	2	6	7	20	-	11	1	-	3	3	-	1	-	2	-	107	44·36	50·58	94·94
Muttra	347	4	-	-	1	-	-	-	-	-	-	1	-	1	-	-	-	-	8	11·53	11·53	23·06
	10,102	220	21	9	17	35	41	9	34	19	13	24	17	5	16	4	22	2	508	21·78	28·52	50·30
Agra	1,220	69	1	3	7	3	5	2	1	3	-	1	4	1	2	-	2	-	104	56·56	28·69	85·25
Morar	1,106	152	3	2	1	6	3	3	12	3	1	-	3	1	6	-	1	1	198	137·43	41·59	179·02
Gwalior Citadel	244	7	1	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	10	28·69	12·31	41·00
Jhansi	623	-	-	-	1	4	6	-	1	1	-	2	1	-	1	-	3	-	20	-	32·10	32·10
Lullutpore	176	-	-	1	-	1	1	1	-	-	-	-	-	-	-	-	2	-	6	-	31·25	31·25
Nowgong	240	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	8·33	8·33
Saugor	860	-	-	-	1	2	1	-	-	1	-	1	-	-	1	1	-	-	8	-	9·30	9·30
Nagode	203	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	-	10·00	10·00
Jubbulpore	861	-	-	5	-	3	1	-	3	-	-	-	-	-	-	-	4	-	16	-	18·58	18·58
	5,533	228	5	12	11	19	17	6	17	10	2	5	8	2	10	1	12	1	366	41·21	24·94	66·15
Umballa	1,820	53	5	1	1	1	1	1	2	6	3	1	1	1	3	1	2	-	83	29·12	16·48	45·60
Dugshaie (7 months)	1,055	-	-	-	-	-	1	2	1	1	-	-	-	-	2	1	1	-	9	-	8·53	8·53
Subathoo (8 months)	1,019	-	-	-	-	3	9	-	1	1	1	-	-	-	-	-	4	-	19	-	18·62	18·62
Kussowlie	223	-	-	-	-	-	-	-	2	-	2	2	-	-	-	1	6	-	13	-	-	-
Jutogh	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phillour	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jullundur	1,015	-	1	-	-	1	2	-	-	1	1	2	-	-	-	1	2	-	11	-	10·84	10·84
Ferozepore	889	1	-	-	-	1	-	-	1	2	-	-	2	-	-	1	2	-	10	1·12	10·13	11·25
Meean Meer	1,700	450	3	4	3	4	3	1	3	5	4	3	5	-	3	1	2	1	495	245·63	45·54	291·17
Lahore Citadel	149	29	-	-	-	-	-	-	-	-	-	-	2	-	-	-	1	-	32	177·91	18·40	196·31
Umritsur and Govindghur	481	41	-	2	-	1	2	1	3	1	2	2	1	-	-	-	-	-	56	85·24	31·18	116·42
Mooltan	734	-	-	-	-	1	-	1	-	1	-	1	6	-	-	-	3	-	13	-	17·71	17·71
Dera Ismael Khan	106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sealkote	1,495	-	1	2	-	-	2	-	-	3	-	1	1	-	2	-	1	-	13	-	8·70	8·70
Kangra	98	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	2	-	20·41	20·41
Rawul Pindee	1,846	-	1	-	-	4	2	-	1	3	1	3	-	-	5	1	-	1	22	-	11·90	11·90
Attock	184	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	3	-	16·30	16·30
Nowshera (11 months)	805	-	2	-	1	-	1	-	-	-	-	-	1	-	-	-	-	-	5	-	6·21	6·21
Campbellpore (7 months)	339	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	2	-	6·00	6·00
Peshawur	1,955	-	-	-	-	5	4	-	1	3	1	2	2	2	-	2	2	-	24	-	12·27	12·27
Murree	229	-	-	-	-	-	-	-	1	-	2	1	-	-	2	-	-	-	6	-	-	-
	15,900	574	13	9	5	21	27	8	16	28	17	19	23	3	17	10	26	2	818	36·10	15·35	51·45
BENGAL PRESIDENCY	44,879	1,065	43	34	52	92	133	32	76	88	42	83	60	20	61	21	100	7	2,009	23·73	21·04	44·77

EUROPEAN TROOPS, 1861—*continued.*

TABLE showing the CAUSES of DEATH and INVALIDING.

TOTAL LOSS TO THE SERVICE BY DEATH AND INVALIDING, 3,322. PER 1,000 OF AVERAGE STRENGTH, 74·02.

Number of Men Lost to the Service by Death, 2,062.				Number of Men Lost to the Service by Invaliding, 1,260.			
CAUSES OF DEATH.	Died in Hospital.	Died out of Hospital.	Died per 1,000 of Strength.	CAUSES OF INVALIDING.	Invalided for Discharge from the Service.	Invalided for Change of Climate.	Invalided per 1,000 of Strength.
Variola	43	-	·96	Febris	26	62	1·96
Tonsillitis	1	—	—	Opthalmia	51	37	1·96
Scarlatina	2	—	—	Erysipelas	-	1	—
Febris Intermittens	34	-	·76	Furunculus	-	1	—
,, Remittens	52	-	1·16	Dysenteria	20	53	2·54
,, Continua	92	-	2·05	Diarrhœa	6	35	
Erysipelas	3	—	—	Rheumatismus	83	88	3·81
Dysenteria Acuta	133	-	3·67	Syphilis	12	29	·98
,, Chronica	32	-		Strictura Urethræ	2	1	
Diarrhœa	76	-	1·69	Ebriositas	-	1	—
Cholera	1,065	-	23·73	Scirrhoma	-	1	—
Rheumatismus	5	—	—	Scrofula	13	6	—
Syphilis Consecutiva	18	—	—	Phthisis Pulmonalis	31	30	1·56
Hydrophobia	3	—	—	Hæmoptysis	4	5	
Ebriositas	1	4	—	Apoplexia	2	2	—
Anœmia	3	—	—	Paralysis	12	4	—
Anasarca	2	—	—	Mania	9	1	·60
Scirrhoma	3	—	—	Dementia	10	7	·45
Phthisis Pulmonalis	83	-	1·85	Epilepsia	15	5	
Hæmoptysis	3	—	—	Cephalæa	2	8	—
Abscessus Psoanus	3	—	—	Neuralgia	2	1	—
Meningitis	4	—	—	Otitis	1	—	—
Encephalitis	5	—	—	Dysecœa	9	—	—
Apoplexia	60	1	1·34	Sciatica	1	—	—
Paralysis	4	—	—	Amaurosis	1	1	—
Mania	2	—	—	Pericarditis	1	—	—
Epilepsia	4	-	·45	Morbus Cordis	18	25	1·49
Delirium Tremens	20	-	·47	Aneurisma	2	—	
Pericarditis	1	-		Palpitatio	13	8	
Morbus Cordis	13	-		Varix	8	3	—
Aneurisma	7	-	1·36	Bronchitis	26	25	1·34
Laryngitis	1	-		Pleuritis	-	2	
Bronchitis	17	-		Pneumonia	-	2	
Pneumonia	34	-		Asthma	3	1	
Pleuritis	3	-		Dyspnœa	1	—	
Hydrothorax	1	-		Hernia	9	—	—
Apoplexia Pulmonum	1	-		Dyspepsia	5	7	—
Asthma	1	-		Hæmorrhois	1	—	—
Dyspepsia	1	—	—	Fistula in ano	-	1	—
Gastritis	5	—	—	Splenitis	1	7	—
Enteritis	2	—	—	Hepatitis	49	122	3·81
Colica	2	—	—	Icterus	-	1	—
Peritonitis	6	—	—	Ascites	-	3	—
Ascites	2	—	—	Nephritis	4	1	—
Splenitis	1	-	2·89	Enuresis	1	—	—
Hepatitis Acuta	88	-		Orchitis	-	5	—
,, Chronica	42	—	—	Contractura	6	2	—
Icterus	1	—	—	Synovitis	-	4	—
Melæna	1	—	—	Ostitis	2	—	—
Nephria	4	—	—	Caries	-	3	—
Albumenuria	2	—	—	Exostosis	1	3	—
Ischuria	1	—	—	Morbus Coxæ	1	—	—
Strictura Urethræ	1	—	—	Morbi Cutis	1	2	—
Abscessus	2	—	—	Paronychia	1	1	—
Asthenia	2	—	—	Abscessus	-	3	—
Atrophia	4	—	—	Ulcus	3	7	—
Gunshot wound	2	-		Debilitas (worn out)	81	38	2·65
Amputation	1	-		Ambustio	-	1	
Accident	3	4		Luxatnra	1	1	
Suffocation	-	2		Subluxatio	1	1	
Drowning	-	28	1·23	Fractura	4	5	·80
Murder	-	1		Contusio	3	3	
Homicide	1	-		Concussio Cerebri	-	1	
Suicide	-	12		Vulnus	12	1	
Execution	-	1		Amputatio	2	—	
				Not specified	8	11	—
Ratio per 1,000 for Deaths from causes not specially calculated	-	-	2·32	Ratio per 1,000 for Invaliding from causes not specially calculated	-	-	4·14
	2,009	53	45·93		581	679	28·09

EUROPEAN TROOPS, 1862.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the BENGAL PRESIDENCY during the Year 1862, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January -	43,073	2,858	6·64	42		1		1		1	2	3	2	3	5	7	1	1	4	5	9	
February -	43,167	2,913	6·75	31		3		2			1	3	4	2	3	4	1	1	6	2	1	
March -	42,045	2,908	6·91	31		5		1		2	3	1	1	5	3	5	1	1	1	1	5	
April -	43,602	3,262	7·48	57		7		2	2	6	4	3	4	6	3	11	1	1	2	1	5	
May - -	43,726	3,378	7·72	48		7	1	1	2	5	3	1	1	5	2	8	4	1	2	1	6	
June - -	43,647	3,309	7·58	45		2		1	5	3	1	2	1	3	4	5	9	3	2	1	3	
July - -	43,660	3,452	7·90	138		71	1	3	5	5	5	2	3	8	5	7	9	3	3	1	7	
August -	43,410	3,789	8·73	284		188		4	7	15	14	4	3	6	6	9	13	2	3	1	9	
September -	43,638	3,761	8·74	167		71		3	9	12	14	2	6	5	5	5	8	4	6	2	13	2
October -	42,708	3,744	8·77	167		47		4	14	12	19	3	4	16	6	8	4	—	7	4	16	3
November -	42,167	3,423	8·12	71		6		4	3	7	8	4	2	8	8	6	1	1	3	3	6	1
December -	41,464	2,721	6·56	72		6		1	3	1	11	2	8	10	3	5	2	2	4	1	12	1
						413	2	25	50	69	85	29	39	77	53	80	51	19	43	20	91	7
						Died per 1,000 of Average Strength.																
	42,980	3,303	7·68	1,153	26·82	9·61	·04	·58	1·16	1·60	1·99	·67	·91	1·80	1·23	1·86	1·19	·44	1·00	·46	2·12	·16

Deaths out of Hospital, 55. Died per 1,000 of Average Strength, 1·29.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera - - -	2	2	7	14	13	4	136	306	103	69	11	7	674	1·57	61·28
Small-pox - -	1	1	1	—	3	6	1	—	—	—	—	—	13	·03	15·40
Intermittent Fevers -	1,097	751	807	1,573	1,591	1,905	2,417	2,411	2,683	4,233	3,443	2,386	25,297		
Remittent Fevers - -	23	25	41	159	207	232	299	263	386	917	358	30	2,940	80·58	·41
Continued Fevers - -	80	113	163	559	711	703	1,018	1,018	659	850	401	124	6,399		
Dysentery - - -	130	108	116	169	142	135	176	262	311	234	173	141	2,097	4·88	5·43
Diarrhœa - - -	213	207	291	457	341	315	815	963	556	413	262	301	5,134	11·95	·76
Hepatitis - - - -	204	184	177	284	210	235	283	245	253	243	161	204	2,683	6·24	4·85
Ophthalmia - - -	221	174	248	353	176	180	231	226	187	183	146	140	2,465	5·74	—
Rheumatism - - -	349	309	339	343	249	282	367	341	322	299	269	276	3,745	8·71	—
Venereal Diseases -	1,456	1,410	1,352	1,642	1,061	946	1,167	893	868	1,038	880	958	13,671	31·81	—
Phthisis Pulmonalis -	24	17	16	29	14	28	27	32	20	26	25	25	283	·66	28·27
Heat Apoplexy - -	1	—	—	2	9	15	22	12	11	4	1	2	79	·18	64·56
Delirium Tremens -	9	6	14	7	9	13	25	21	16	5	6	5	136	·32	14·00
Epilepsy - - - -	16	15	9	20	18	7	19	17	10	16	20	14	181	·42	—
Respiratory Diseases -	290	286	283	287	217	196	255	229	202	216	242	213	2,916	6·78	1·47
Abscess and Ulcer - -	341	361	370	468	387	401	531	441	362	387	270	266	4,585	10·67	—
Wounds and Accidents -	344	302	368	402	338	271	298	235	215	295	235	354	3,657	8·51	—
All other Diseases - -	450	463	557	890	688	708	815	744	683	682	499	571	7,750	18·03	·33
	5,251	4,734	5,159	7,658	6,384	6,582	8,902	8,659	7,847	10,110	7,402	6,017	84,705		
	Admitted per Cent. of Average Strength in each Month.														
	12·22	11·01	12·01	17·82	14·85	15·31	20·71	20·15	18·26	23·52	17·22	14·00	197·08		

EUROPEAN TROOPS, 1862—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in BENGAL PROPER during the Year 1862, and the Prevalence of the Principal Diseases in each month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	2,429	135	5·56	7		–	–	1	–	1	1	1	–	1	–	–	–	–	1	–	1	–
February	1,632	91	5·58	2		1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
March	1,484	96	6·47	2		1	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–
April	2,677	172	6·43	9		5	–	–	–	–	–	1	–	–	–	1	1	–	1	–	–	–
May	2,704	188	6·95	6		2	–	–	–	–	–	–	–	1	–	1	2	–	–	–	–	–
June	2,713	165	6·08	3		1	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–
July	2,701	193	7·15	8		4	–	–	–	1	–	–	–	2	–	1	–	–	–	–	–	–
August	2,674	213	7·96	9		–	–	–	–	2	–	–	–	1	–	1	3	1	–	–	1	–
September	2,682	185	6·90	4		–	–	1	–	–	–	–	–	–	–	2	1	–	–	–	–	–
October	2,653	181	6·82	5		–	–	–	–	1	–	1	–	–	–	2	–	–	1	–	–	–
November	2,552	147	5·76	4		1	–	–	–	1	–	–	–	–	1	–	–	–	1	–	–	–
December	2,587	101	3·90	6		–	–	–	–	–	2	–	1	–	–	–	–	1	–	–	2	–
						15	–	2	–	6	3	3	1	6	1	9	7	3	5	–	4	–
						Died per 1,000 of Average Strength.																
	2,457	156	6·35	65	26·45	6·11	–	·81	–	2·44	1·22	1·22	·40	2·44	·40	3·66	2·85	1·22	2·03	–	1·62	–

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	1	1	7	3	–	5	–	–	–	1	–	18	·73	83·33
Small-pox	–	–	–	–	–	–	–	–	–	–	–	–	—	—	—
Intermittent Fevers	36	20	27	30	19	15	53	43	68	64	47	37	459		
Remittent Fevers	–	–	2	1	1	–	21	1	3	7	–	–	36	46·28	·70
Continued Fevers	11	5	7	24	22	53	211	156	63	49	30	11	642		
Dysentery	16	16	6	13	6	6	12	9	14	11	5	3	117	4·76	5·13
Diarrhœa	21	21	18	55	32	15	32	37	37	27	26	17	338	13·75	·29
Hepatitis	9	6	7	10	5	12	16	8	12	21	10	3	119	4·85	5·88
Ophthalmia	5	6	3	4	9	7	10	8	9	9	4	7	81	3·29	—
Rheumatism	19	9	6	18	17	9	16	25	25	12	9	8	173	7·04	—
Venereal Diseases	40	31	29	145	62	48	52	48	44	55	48	43	645	26·25	—
Phthisis Pulmonalis	–	–	2	3	1	1	3	1	3	–	–	–	14	·57	64·30
Heat Apoplexy	–	–	–	1	2	–	–	2	–	–	–	–	5	·20	100·00
Delirium Tremens	1	1	2	1	–	3	2	2	1	–	–	–	13	·53	23·07
Epilepsy	1	–	–	2	4	–	1	5	2	1	2	2	20	·81	—
Respiratory Diseases	9	6	5	20	10	7	12	10	22	18	21	13	153	6·23	3·27
Abscess and Ulcer	20	9	7	32	29	16	26	24	26	45	20	15	269	10·95	—
Wounds and Accidents	22	9	10	26	21	10	16	20	20	20	14	25	213	8·67	—
All other Diseases	17	10	13	37	29	31	31	44	42	50	31	21	356	14·50	·23
	227	150	145	429	272	233	519	443	391	389	268	205	3,671		
	Admitted per Cent. of Average Strength in each Month.														
	9·35	9·16	9·79	16·03	10·06	8·58	19·21	16·56	14·58	14·66	10·50	7·93	149·41		

EUROPEAN TROOPS, 1862—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the DINAPORE, BENARES, and OUDE DISTRICTS during the Year 1862, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January -	9,956	633	6·36	8		–	–	1	–	–	–	–	–	1	1	1	–	–	1	–	4	1
February -	9,836	676	6·88	5		–	–	1	–	–	–	–	–	1	1	1	–	–	1	–	1	–
March -	9,090	611	6·72	2		–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–
April -	8,854	677	7·64	11		–	–	1	2	3	–	–	–	2	–	3	–	–	–	–	–	–
May -	8,852	656	7·41	12		1	1	–	–	3	–	–	–	1	–	1	–	–	2	–	3	–
June -	8,832	594	6·73	5		–	–	–	1	–	–	1	–	1	–	–	–	–	1	–	1	–
July -	8,826	617	7·00	7		–	–	–	1	–	1	–	–	1	–	1	–	2	–	–	1	–
August -	8,802	648	7·36	11		–	–	–	–	3	4	–	–	–	–	2	–	–	–	–	2	–
September -	8,789	653	7·43	11		–	–	–	1	1	4	–	–	–	1	–	–	–	2	–	2	–
October -	8,695	602	6·92	27		–	–	1	6	4	6	1	–	3	2	1	–	–	–	–	3	–
November -	8,412	531	6·31	13		–	–	–	–	2	2	–	–	3	1	1	–	–	–	2	2	–
December -	8,466	458	5·41	13		–	–	–	–	–	–	–	1	6	2	–	–	–	2	–	1	1
						1	1	3	11	16	17	2	1	19	8	12	–	2	9	2	20	1
						Died per 1,000 of Average Strength.																
	8,951	613	6·85	125	13·96	·11	·11	·33	1·23	1·79	1·90	·22	·11	2·12	·90	1·34	–	·22	1·01	·22	2·24	·11

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera - - - -	1	–	1	2	2	1	–	1	–	–	2	–	10	·11	10·00
Small-pox - - - -	–	–	1	–	2	1	1	–	–	–	–	–	5	·06	20·00
Intermittent Fevers -	236	155	137	281	205	225	257	207	247	251	219	163	2,583	44·16	·76
Remittent Fevers - -	5	3	9	37	40	43	57	41	55	135	111	22	558		
Continued Fevers - -	16	22	54	124	89	58	91	69	96	144	33	16	812		
Dysentery - - - -	17	22	23	35	27	21	27	54	61	66	36	22	411	4·59	4·62
Diarrhœa - - - -	60	57	74	82	47	59	83	89	81	56	37	41	766	8·56	·13
Hepatitis - - - -	33	28	33	45	35	31	40	37	46	42	23	31	424	4·74	6·37
Ophthalmia - - - -	59	44	58	80	33	33	37	34	42	26	20	28	494	5·52	—
Rheumatism - - - -	72	79	77	76	56	79	88	78	66	59	42	50	822	9·18	—
Venereal Diseases - -	374	360	247	319	223	160	244	195	194	236	164	210	2,926	32·69	—
Phthisis Pulmonalis - -	5	4	2	6	2	4	5	5	5	7	1	3	49	·55	24·50
Heat Apoplexy - -	–	–	–	–	–	–	1	1	–	–	–	–	2	·02	—
Delirium Tremens - -	1	–	2	1	3	2	6	3	2	1	1	–	22	·24	9·01
Epilepsy - - - -	3	2	1	2	2	–	3	3	1	2	1	1	21	·24	—
Respiratory Diseases -	60	69	50	61	38	21	45	46	47	46	43	49	575	6·42	1·57
Abscess and Ulcer - -	67	76	74	81	63	73	90	111	75	73	48	57	888	9·92	—
Wounds and Accidents -	64	45	66	74	58	58	60	46	51	51	42	72	687	7·68	—
All other Diseases - -	87	105	113	159	156	134	133	155	123	152	102	92	1,511	16·88	·31
	1,160	1,071	1,022	1,465	1,081	1,003	1,268	1,175	1,192	1,347	925	857	13,566		
	Admitted per Cent. of Average Strength in each Month.														
	11·65	10·89	11·24	16·55	12·21	11·35	14·37	13·35	13·56	15·49	10·64	10·02	151·56		

EUROPEAN TROOPS, 1862—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the CAWNPORE, MEERUT, and ROHILCUND DISTRICTS during the Year 1862, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January -	9,737	760	7·80	12		–	–	–	–	–	–	1	2	–	1	3	–	–	–	3	2	–
February -	9,940	799	8·04	5		1	–	–	–	–	–	–	2	–	1	1	–	–	1	–	–	–
March -	9,652	837	8·67	10		1	–	–	–	–	–	–	1	2	3	2	–	1	–	–	–	–
April -	10,049	953	9·48	17		–	–	–	–	2	2	2	3	1	1	2	–	1	1	–	2	–
May -	10,055	929	9·24	9		1	–	–	–	1	1	–	–	–	1	2	1	1	–	–	1	–
June -	9,997	931	9·31	16		1	–	–	2	–	1	–	–	1	2	2	2	2	–	1	2	–
July -	10,028	954	9·51	31		13	–	1	1	–	–	–	–	2	3	2	4	1	2	1	3	–
August -	10,003	998	9·98	39		18	–	–	1	3	3	1	1	3	2	2	–	1	1	–	3	–
September	10,009	1,012	10·11	22		1	–	–	1	3	4	1	–	–	3	1	2	1	2	–	2	1
October -	9,971	1,012	10·15	30		–	–	1	5	–	5	–	1	4	2	2	1	–	1	–	7	1
November	9,434	934	9·89	11		–	–	1	–	1	1	1	–	2	3	1	–	–	–	–	1	–
December-	8,841	747	8·45	17		–	–	1	3	–	6	–	1	1	1	–	1	–	1	–	2	–
						36	–	4	13	10	23	6	11	16	23	17	11	8	9	5	25	2
						Died per 1,000 of Average Strength.																
	9,810	909	9·27	219	22·23	3·67	–	·41	1·33	1·02	2·35	·61	1·10	1 63	2·34	1·73	1·10	·82	·92	·51	2·55	·20

DISEASES.	Number of Admissions into Hospital in each Month. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera - - - -	–	1	1	1	1	1	24	28	–	–	–	1	58	·59	62·07
Small-pox - - -	–	–	–	–	1	3	–	–	–	–	–	–	4	·05	—
Intermittent Fevers - -	143	122	141	364	273	331	381	425	455	824	564	229	4,252		
Remittent Fevers - -	15	15	17	33	38	68	32	11	13	49	21	3	315	58·07	·47
Continued Fevers - -	18	27	30	138	90	152	126	153	119	175	71	31	1,130		
Dysentery - - -	20	8	27	58	28	39	40	61	73	61	44	42	501	5·11	5·78
Diarrhœa - - - -	37	49	73	120	68	81	189	239	134	87	64	48	1,189	12·12	·92
Hepatitis - - - -	66	56	38	83	74	71	64	78	59	65	37	49	740	7·54	5·27
Ophthalmia - - -	44	52	87	106	46	53	55	64	49	51	40	42	689	7·02	—
Rheumatism - - -	80	84	79	90	55	79	88	88	88	98	82	57	968	9·87	—
Venereal Diseases - -	389	393	387	441	248	247	312	242	244	286	245	205	3,639	37·09	—
Phthisis Pulmonalis - -	7	3	3	8	4	11	7	8	5	9	12	7	84	·86	20·24
Heat Apoplexy - -	–	–	–	–	4	4	9	–	2	1	–	1	21	·22	52·40
Delirium Tremens - -	4	–	4	2	2	3	4	4	4	1	3	2	33	·34	24·24
Epilepsy - - - -	3	5	2	6	1	1	5	4	1	5	5	3	41	·42	—
Respiratory Diseases -	38	54	67	76	49	64	58	53	46	57	60	41	663	6·76	1·36
Abscess and Ulcer - -	101	92	98	106	90	101	142	103	105	107	68	75	1,188	12·11	—
Wounds and Accidents -	75	67	71	78	67	55	76	45	47	59	49	76	765	7·69	—
All other Diseases - -	91	101	136	221	180	183	175	152	158	168	102	122	1,789	18·23	·35
	1,131	1,129	1,261	1,931	1,319	1,547	1,787	1,758	1,602	2,103	1,467	1,034	18,069		
	Admitted per Cent. of Average Strength in each Month.														
	11·61	11·36	13·06	19·21	13·12	15·47	17·80	17·57	16·00	21·09	15·50	11·70	184·19		

EUROPEAN TROOPS, 1862—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the AGRA DISTRICT and in CENTRAL INDIA during the Year 1862, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	5,396	324	6·00	5		–	–	–	–	–	1	–	–	–	1	–	–	–	1	–	2	–
February	5,647	359	6·36	3		–	–	–	–	–	–	1	–	–	1	–	–	–	–	1	–	–
March	5,578	386	6·92	5		–	–	–	–	2	–	–	–	2	–	1	–	–	–	–	–	–
April	5,656	382	6·75	8		1	–	1	–	1	–	–	1	1	1	1	–	–	–	–	1	–
May	5,638	404	7·16	4		–	–	–	–	1	–	–	–	1	1	–	1	–	–	–	–	–
June	5,622	420	7·47	11		–	–	1	1	2	–	–	–	–	–	1	6	–	–	–	–	–
July	5,608	489	8·72	32		23	1	1	1	–	2	1	–	1	–	1	–	–	–	–	1	–
August	5,483	596	10·87	125		107	–	–	2	2	2	1	1	1	1	2	3	–	1	–	2	–
September	5,417	587	10·83	36		15	–	–	5	2	2	–	3	3	–	1	–	1	1	–	3	–
October	5,254	732	13·93	12		–	–	–	1	2	2	–	–	–	–	1	1	–	2	–	1	2
November	5,102	670	13·13	12		–	–	1	3	–	3	–	–	–	1	1	–	–	1	–	1	1
December	4,738	404	8·53	5		–	–	–	–	1	1	–	–	–	–	–	–	1	1	–	1	–
						146	1	4	13	13	13	3	5	9	6	9	11	2	7	1	12	3
						Died per 1,000 of Average Strength.																
	5,429	480	8·84	258	47·52	26·90	·19	·74	2·40	2·40	2·40	·55	·92	1·66	1·11	1·66	2·02	·37	1·29	·19	2·21	·55

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	–	1	–	2	33	148	22	4	–	–	210	3·86	69·52
Small-pox	–	–	–	–	–	1	–	–	–	–	–	–	1	·02	100·00
Intermittent Fevers	264	167	143	273	228	305	572	477	508	1,196	1,059	687	5,879		
Remittent Fevers	1	5	6	55	94	82	50	38	109	335	154	4	933	150·71	·37
Continued Fevers	9	21	18	48	69	47	144	343	191	313	149	18	1,370		
Dysentery	16	16	10	14	11	14	47	48	44	30	33	12	295	5·44	5·43
Diarrhœa	12	14	21	29	24	16	134	247	96	39	32	59	723	13·32	·69
Hepatitis	30	31	26	27	17	26	37	37	63	34	18	29	375	6·91	4·00
Ophthalmia	19	26	31	25	16	10	41	26	22	18	15	14	263	4·85	—
Rheumatism	53	56	50	36	29	35	47	35	63	47	46	20	517	9·52	—
Venereal Diseases	142	176	167	195	131	114	173	112	123	144	142	117	1,736	31·97	—
Phthisis Pulmonalis	1	1	1	2	1	4	1	3	2	2	1	–	19	·35	47·40
Heat Apoplexy	1	–	–	1	1	7	2	2	–	–	–	–	14	·26	78·60
Delirium Tremens	–	–	2	1	–	1	2	5	1	–	–	1	13	·24	15·40
Epilepsy	1	3	1	5	3	1	1	1	4	1	–	3	24	·44	—
Respiratory Diseases	40	36	43	23	23	22	32	19	32	28	29	25	352	6·48	2·00
Abscess and Ulcer	35	56	45	58	58	74	57	31	35	31	40	16	536	9·87	—
Wounds and Accidents	38	47	54	55	47	30	37	29	13	34	19	24	427	7·87	—
All other Diseases	52	63	76	84	67	67	88	59	63	51	65	108	843	15·52	·37
	714	718	694	932	819	858	1,498	1,660	1,391	2,307	1,802	1,137	14,530		
	Admitted per Cent. of Average Strength in each Month.														
	13·23	12·71	12·44	16·48	14·52	15·26	26·71	·30·28	25·68	43·91	35·32	24·00	267·63		

EUROPEAN TROOPS, 1862—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Punjab* during the Year 1862, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	15,224	867	5·69	5		–	–	–	–	–	–	–	–	1	–	1	–	–	1	2	–	–
February	15,749	905	5·75	10		–	–	1	–	–	1	1	–	1	–	2	–	–	3	1	–	–
March	16,001	902	5·64	5		–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	3	–
April	16,246	1,015	6·25	9		–	–	–	–	–	1	–	–	2	1	3	–	–	–	–	2	–
May	16,361	1,150	7·03	15		3	–	–	2	–	2	–	1	2	–	3	–	–	–	–	2	–
June	16,358	1,162	7·10	10		–	–	–	1	1	–	1	1	1	2	1	1	–	1	–	–	–
July	16,374	1,161	7·09	60		31	–	1	2	4	2	1	3	2	2	4	5	–	1	–	2	–
August	16,327	1,291	7·91	99		63	–	4	3	5	5	2	1	1	3	2	7	–	1	1	1	–
September	16,019	1,275	7·96	94		55	–	2	2	6	4	1	3	2	1	1	5	2	1	2	6	1
October	15,992	1,182	7·39	93		47	–	2	2	5	6	1	3	9	2	2	2	–	3	4	5	–
November	15,366	1,002	6·52	28		4	–	2	–	3	2	3	2	3	1	3	1	1	–	1	2	–
December	15,107	799	5·29	14		–	–	–	–	–	1	2	2	3	–	1	1	–	–	1	3	–
						203	–	12	12	24	26	12	16	27	12	23	22	3	11	12	26	1
						Died per 1,000 of Average Strength.																
	15,930	1,065	6·69	442	27·75	12·74	–	·75	·75	1·51	1·63	·75	1·00	1·70	·75	1·45	1·38	·19	·69	·75	1·63	·06

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	–	2	6	–	74	129	81	65	5	1	363	2·28	55·92
Small-pox	1	1	–	–	–	1	–	–	–	–	–	–	3	·02	—
Intermittent Fevers	400	273	351	619	863	1,025	1,144	1,257	1,402	1,894	1,545	1,245	12,018		
Remittent Fevers	2	2	7	33	34	39	138	172	206	391	72	1	1,097	97·20	·31
Continued Fevers	22	38	48	224	440	393	434	292	176	167	100	35	2,369		
Dysentery	37	32	44	46	64	51	48	89	117	61	45	41	675	4·24	5·63
Diarrhœa	68	53	94	162	163	139	369	346	207	203	97	84	1,985	12·46	·81
Hepatitis	50	61	71	116	79	95	125	85	71	77	59	62	951	5·97	4·10
Ophthalmia	74	42	67	138	71	73	86	94	65	77	59	37	883	5·54	—
Rheumatism	103	78	122	122	89	76	127	112	79	77	73	108	1,166	7·32	—
Venereal Diseases	478	422	480	531	393	374	380	291	262	307	243	338	4,499	28·24	—
Phthisis Pulmonalis	1	9	5	8	5	8	11	13	4	7	3	3	77	·48	30·00
Heat Apoplexy	–	–	–	–	2	4	10	7	9	3	1	1	37	·23	59·46
Delirium Tremens	2	–	4	2	4	4	7	4	8	3	2	2	42	·27	7·14
Epilepsy	4	3	4	4	7	5	8	4	2	7	5	5	58	·37	—
Respiratory Diseases	133	118	114	107	96	82	105	101	55	66	79	76	1,132	7·11	·97
Abscess and Ulcer	109	126	140	188	146	133	213	170	121	128	84	87	1,645	10·33	—
Wounds and Accidents	141	131	154	169	142	118	107	93	82	130	102	136	1,505	9·44	—
All other Diseases	152	166	203	380	248	284	376	324	292	253	140	169	2,987	18·75	·31
	1,777	1,555	1,908	2,851	2,852	2,904	3,762	3,583	3,239	3,916	2,714	2,431	33,492		
	Admitted per Cent. of Average Strength in each Month.														
	11·67	9·88	11·92	17·55	17·43	17·75	22·98	21·94	20·22	24·49	17·66	16·09	210·25		

EUROPEAN TROOPS, 1862—*continued.*

COMPARATIVE STATEMENT of the Ratios of SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the various PROVINCES of the *Bengal* Presidency during the Year 1862.

DISEASES.	BENGAL PROPER. Average Strength - 2,457; Daily Sick per Cent. of Strength - 6·35; Admitted per Cent. of Strength - 149·41; Died per 1,000 of Strength— A. From Cholera - 6·11; B. From all Causes 26·45			DINAPORE, BENARES, AND OUDE. Average Strength - 8,951; Daily Sick per Cent. of Strength - 6·85; Admitted per Cent. of Strength - 151·56; Died per 1,000 of Strength— A. From Cholera - 11; B. From all Causes 13·96			CAWNPORE AND MEERUT. Average Strength - 9,810; Daily Sick per Cent. of Strength - 9·27; Admitted per Cent. of Strength - 184,19; Died per 1,000 of Strength— A. From Cholera - 3·67; B. From all Causes 22·33			AGRA AND CENTRAL INDIA. Average Strength - 5,429; Daily Sick per Cent. of Strength - 8·84; Admitted per Cent. of Strength - 267·63; Died per 1,000 of Strength— A. From Cholera - 26·90; B. From all Causes 47·52			PUNJAB. Average Strength - 15,930; Daily Sick per Cent. of Strength - 6·69; Admitted per Cent. of Strength - 210·25; Died per 1,000 of Strength— A. From Cholera - 12·74; B. From all Causes 27·75			BENGAL PRESIDENCY. Average Strength - 42,980; Daily Sick per Cent. of Strength - 7·68; Admitted per Cent of Strength - 197·08; Died per 1,000 of Strength— A. From Cholera - 9·61; B. From all Causes 26·82		
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.
Cholera	73	83·33	6·11	·11	10·00	·11	·59	62·07	3·67	3·86	69·52	26·90	2·28	55·92	12·74	1·57	61·28	9·61
Small-pox	–	–	–	·06	20·00	·11	·05	–	–	·02	100·00	·19	·02	–	–	0	15·40	·04
Fevers	46·28	·70	3·25	44·16	·76	3·35	58·07	·47	2·76	150·71	·37	5·54	97·20	·31	3·01	80·58	·41	3·34
Dysentery	4·76	5·13	2·44	4·59	4·62	2·12	5·11	5·78	2·96	5·44	5·43	2·95	4·24	5·63	2·38	4·88	5·43	2·66
Diarrhœa	13·75	·29	·40	8·56	·13	·11	12·12	·92	1·10	13·32	·69	·92	12·46	·81	1·00	11·95	·76	·91
Hepatitis	4·85	5·88	2·84	4·74	6·37	3·02	7·54	5·27	3·97	6·91	4·00	2·77	5·97	4·10	2·45	6·24	4·85	3·03
Ophthalmia	3·29	–	–	5·52	–	–	7·02	–	–	4·85	–	–	5·54	–	–	5·74	–	–
Rheumatism	7·04	–	–	9·18	–	–	9·87	–	–	9·52	–	–	7·32	–	–	8·71	–	–
Venereal Diseases	26·25	–	–	32·69	–	–	37·09	–	–	31·97	–	–	28·24	–	–	31·81	–	–
Phthisis Pulmonalis	·57	64·30	3·66	·55	24·50	1·34	·86	20·24	1·73	·35	47·40	1·66	·48	30·00	1·45	·66	28·27	1·86
Heat Apoplexy	·20	100·00	2·85	·02	–	–	·22	52·40	1·10	·20	78·60	2·02	·23	59·46	1·38	·18	64·56	1·19
Delirium Tremens	·53	23·07	1·22	·24	9·01	·22	·34	24·24	·82	·24	15·40	·37	·27	7·14	·19	·32	14·00	·44
Epilepsy	·81	–	–	·24	–	–	·42	–	–	·44	–	–	·37	–	–	·42	–	–
Respiratory Diseases	6·23	3·27	2·03	6·42	1·57	1·01	6·76	1·36	·92	6·48	2·00	1·29	7·11	·97	·69	6·78	1·47	1·00
Abscess and Ulcer	10·95	–	–	9·92	–	–	12·11	–	–	9·87	–	–	10·33	–	–	10·67	–	–
Wounds and Accidents	8·67	–	–	7·68	–	·11	7·69	–	·20	7·87	–	·55	9·44	–	·06	8·51	–	·16
All other Diseases	14·50	·23	1·62	16·88	·31	2·46	18·23	·35	3·06	15·52	·37	2·40	18·75	·31	2·38	18·03	·33	2·58
	149·41	–	26·45	151·56	–	13·96	184·19	–	22·33	267·63	–	47·52	210·25	–	27·75	197·08	–	26·82

TABLE showing the GENERAL STATISTICS of SICKNESS and MORTALITY in the PRINCIPAL MILITARY STATIONS of the *Bengal* Presidency.

STATIONS.	Period of Observation.	Average Strength during Period of Observation.	Daily Sick per Cent. of Average Strength in each Month.											Daily Sick per Cent. of Average Strength for the Year.	Number of Admissions into Hospital.	Admitted per Cent. of Average Strength.	Number of Deaths.		Died per 1,000 of Average Strength.		
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				A. Cholera	B. All other Causes.	A. Cholera.	B. All other Causes.	C. All Causes.
Fort William		880	5·65	6·81	9·23	6·66	7·92	7·34	10·43	9·77	6·79	6·07	6·41	3·44	7·16	1,420	161·36	13	18	14·77	20·46	35·23
Barrackpore	Av. Str. for 9 months, April to Dec., 902	768	5·50	4·39	5·00	7·04	7·66	6·30	5·71	7·61	5·66	6·21	4·44	4·10	6·10	1,138	119·29	–	18	–	16·63	16·63
Berhampore		296	6.45	3·87	3·66	4·38	4·07	4·07	4·07	5·12	5·84	7·90	5·92	6·27	5·07	338	114·18	1	5	3·38	16·89	20·27
Raneegunge		462	5·21	5·00	4·94	6·14	5·78	5·03	6·04	7·04	10·22	8·70	6·12	3·33	6·28	666	144·15	–	7	–	15·19	15·19
Hazareebaugh		1,101	4·48	3·42	3·38	4·53	4·60	3·79	3·07	3·00	3·44	2·82	2·82	3·41	3·54	760	69·03	1	18	·91	16·34	17·25
Dinapore		655	7·42	9·79	8·86	7·12	7·40	7·55	7·94	8·72	7·62	6·88	6·29	6·07	7·94	1,260	192·36	–	10	–	15·27	15·27
Benares		1,142	4·08	4·44	5·93	7·67	6·69	6·24	6·62	7·07	8·55	8·42	7·41	6·55	6·48	1,548	135·55	–	15	–	13·14	13·14
Gorackpore	Av. Str. for 10 months, Mar. to Dec., 392	483	4·36	4·83	6·40	7·44	7·96	9·02	8·80	8·59	11·42	20·67	26·34	8 97	11·48	1,010	220·92	–	27	–	55·90	55·90
Gondah		787	5·93	7·09	4·95	5·80	5·23	5·87	5·87	7·77	8·38	7·93	5·93	5·37	6·37	1,893	240·53	–	4	–	5·08	5·08
Fyzabad		1,254	7·42	7·19	7·82	7·70	6·51	6·12	9·54	7·64	7·35	5·28	4·98	4·04	6·78	1,512	120·57	–	7	–	5·58	5·58
Roy Bareilly		587	6·36	7·59	4·49	6·05	6·39	4·21	4·38	4·90	3·38	4·40	4·44	4·67	5·11	746	127·10	–	2	–	3·41	3·41
Lucknow		2,093	8·10	9·23	8·65	10·31	10·45	9·06	8·42	9·31	8·95	7·34	6·09	6·23	8·55	3,566	170·38	–	32	–	15·29	15·29
Seetapore		606	7·68	8·93	8·00	8·62	8·54	7·36	7·52	9·97	8·82	7·44	5·67	5·33	7·92	985	162·54	–	5	–	8·25	8·25
Allahabad		1,107	7·14	6·17	6·60	7·79	8·79	8 89	10·00	12·15	12·11	10·06	10·90	7·47	9·03	2,406	217·34	–	21	–	18·97	18·97
Cawnpore		1,259	6·44	5·32	7·54	6·81	6·01	5·94	6·29	6·64	6·32	6·78	4·56	3·55	6 04	2,074	164·65	–	18	–	14·30	14·30
Futtehgurh		549	7·62	7·48	9·71	10·09	11·19	9·93	8·83	9·73	10·18	12·07	15·11	10·58	10·20	1,004	182·88	–	10	–	18·22	18·22
Bareilly		1,096	4·53	4·03	3·13	3·73	4·41	4·89	5·19	5·20	4·84	4·28	4·51	3·80	4·38	1,019	93·00	–	6	–	5·47	5·47
Shahjehanpore		530	6·14	8·04	6·70	6·29	7·41	9·26	8·89	8·31	8·14	7·95	6·48	3·81	7·36	596	112·45	3	2	5·66	3·77	9·43
Moradabad		428	8·73	8·73	9·00	12·35	9·91	9·11	9·81	11·03	9·61	11·16	9·22	6·85	9·58	887	207·24	–	4	–	9·34	9·34
Roorkee		611	5·84	5·71	7·46	9·33	8·50	6·82	8·61	9·10	8·00	7·42	5·36	3·72	7·20	1,083	177·25	–	12	–	19·64	19·64
Meerut		2,038	6·25	7·78	8·20	8·58	7·61	7·08	7·57	6·81	7·62	8·61	9·78	6·95	7·75	3,680	180·54	32	27	15·70	13·25	28·95
Delhi		1,170	9·09	11·62	12·43	11·89	10·58	13·20	12·08	13·79	14·71	16·23	14·08	11·62	12·65	2,588	221·19	–	33	–	28·20	28·20
Muttra		502	9·28	11·04	10·49	10·53	11·33	10·53	8·74	8·55	8·38	9·58	7·85	10·36	9·76	1,025	204·18	–	4	–	8·00	8·00
Agra		1,153	6·00	5·48	6·55	5·36	5·80	4·88	7·73	15·32	11·25	16·27	16·09	8·77	9·11	2,873	249·18	49	15	42·50	13·01	55·51
Gwalior Fortress	10 Months, January to October	237	3·85	5·20	5·18	6·66	8·51	8·12	7·23	9·29	8·67	7·80	–	–	7·18	452	190·72	20	–	84·39	–	84·39
Morar		1,048	5 06	5·50	5·12	5 83	5·68	5·17	5·33	6·23	8·09	14·18	10·82	8·23	6·96	2,330	222·35	39	34	37·21	32·45	69·66
Jhansi		769	10·37	8·27	8·71	8·17	7·78	9·56	11·68	12·95	15·30	17·69	16·31	10·43	11·31	2,614	339·92	37	21	48·11	27·31	75·42
Nowgong		251	5·21	9·16	8·74	8·74	8·74	11·03	9·89	9·54	8·40	9·58	6·00	3·00	8·36	599	238·64	–	2	–	8·00	8·00
Saugor		832	5·15	6·47	6·96	9 24	10·33	10·92	11·65	11·56	13·94	14·93	11·70	9·61	10·22	2,253	270·79	–	15	–	18·03	18·03
Nagode		256	5·83	6·02	5·86	4·58	3·32	5·04	6·30	7·14	6·52	14·90	17·09	7·27	7·62	884	374·58	–	1	–	4·24	4·24
Jubbulpore		847	5·07	6·23	8·26	6·87	7 19	7·53	9·02	10·22	9·46	9·93	10·80	6·32	8·15	2,208	260·68	–	20	–	23·61	23·61
Umballa		1,767	4·52	5·49	5·43	6·54	8·13	8·39	8·00	8·06	6·62	5·46	4·87	4·80	6·34	3,787	214·32	2	11	1·13	6·23	7·36
Dugshaie	9 Months, April to December	914	–	–	–	7·32	7·90	7·24	7·13	7·16	7·68	6·00	4·46	3·26	6·56	882	94·53	–	15	–	16·41	16·41
Subathoo		810	5·88	6 73	5·66	5·66	6 00	7·30	7·23	6·15	5·08	5·17	4·64	3·00	5·68	870	107·41	–	8	–	9·88	9·88
Jullundur		1,165	3 74	4·69	5·40	5·32	6·13	6·00	6·40	7·92	7·39	5·38	4·73	3·89	5·49	1,959	168·15	–	14	–	12·02	12·02
Ferozepore		967	3·93	3·70	6·42	6·56	5·90	5·64	5·57	7·83	7·69	6·20	3·96	3·26	5·48	1,289	133·30	4	15	4·14	15·51	19·65
Mecan Meer		1,362	3·72	5·24	5·21	5·29	5·44	6·00	7·00	8·44	12·79	12·43	9·51	6·70	7·34	3,233	237·37	68	37	49·93	27·16	77·09
Umritsur and Govindghur.		532	3·68	5·05	3·36	4·71	6·73	8·67	7·40	8·77	6·38	6·82	4·38	3·75	5·83	1,057	198·68	15	7	28·19	13·16	41·25
Mooltan		1,117	5·88	7·28	6·00	5·86	7·20	7·57	7·60	8·64	10·87	11·73	10·80	9·19	8·15	3,679	329·36	–	22	–	19·69	19·69
Dera Ismael Khan		98	6·60	3·88	4·00	5·05	6·06	8·08	8·16	15·31	14·29	10·31	17·71	18·18	9·18	327	333·70	–	4	–	–	–
Sealkote		1,438	4·09	3·59	4·34	4·63	4·82	5·82	5·33	6·74	5·64	5·05	5·61	5·73	5·08	2,184	151·88	10	10	6·94	6·94	13·88
Kangra	8 Months, March to October	110	–	–	4·55	5·45	6·31	3·63	4·55	6·30	6·30	8·41	–	–	5·45	78	–	–	1	–	9·09	9·09
Jhelum	7 Months, April to October	156	–	–	–	5·10	3·82	4·46	5·10	3·80	4·46	3·80	–	–	4·46	96	–	–	–	–	–	–
Rawul Pindee		1,591	7·48	5·41	8·41	9·19	9·00	7·00	7·82	9·63	10·33	7·78	7·17	5·18	7·86	4,042	254·05	–	25	–	15·71	15·71
Campbellpore	6 Months, March to August	350	–	–	3·45	5·95	7·53	11·41	14·24	19·88	–	–	–	–	10 29	740	–	–	1	–	2·86	2·86
Attock		195	3·70	3·90	3·23	5·53	5·16	6·57	4·78	5·31	4·85	5·50	12·00	7·53	5·64	423	217 00	–	2	–	20·51	20·51
Nowshera		722	8·06	8·32	3·80	4·64	4·35	3·92	3·57	3·64	4·56	5·40	5·26	5·45	5·26	1,164	161·22	2	5	2·77	6·93	9·70
Peshawur		1,970	6·38	5·89	5·22	7·09	9·20	8·96	7·72	7·70	8·58	10·75	8·28	5·78	7·56	5,764	292·60	97	27	49·24	13·70	62·94

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EUROPEAN TROOPS, 1862—*continued.*

TABLE showing the Ratio in which the PRINCIPAL DISEASES have contributed to make up the ADMISSION-RATE of the Year in the CHIEF MILITARY STATIONS of the *Bengal* Presidency.

STATIONS.	Average Strength.	Admitted into Hospital per Cent. of Average Strength.											Admitted per Cent. of Average Strength from all Causes.
		Cholera.	Heat Apoplexy.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Diseases of the Respiratory Organs.	All other Causes.	
Fort William	880	1·82	·23	46·36	4·89	18·52	5·80	3·86	5·57	35·34	6·25	32·72	161·36
Barrackpore (9 months)	902	–	·22	35·37	5·32	11·09	3·66	1·11	4·21	16·30	5·87	36·14	119·29
Berhampore	296	·33	–	47·63	2·70	8·10	3·38	10·14	4·73	7·77	4·40	25·00	114·18
Raneegunge	462	–	·22	43·94	2·81	10·61	2·81	1·51	11·69	31·39	6·49	32·68	144·15
Sinchal, Darjeeling	159	–	–	8·81	1·26	1·89	·63	1·88	9·43	26·42	9·43	28·30	83·65
Hazareebaugh	1,101	·18	–	22·89	4·27	3·09	1·09	2·45	2·18	13·71	3·73	15·44	69·03
Dinapore	655	·61	–	26·56	9·16	15·72	4·58	9·62	9·01	51·30	13·74	52·06	192·36
Benares	1,142	·09	–	31·09	7·18	7·43	3·77	2·19	9·11	30·73	4·73	39·23	135·55
Goruckpore (10 months)	392	–	–	145·92	7·65	4·85	3·31	1·79	10·97	17·35	4·85	24·23	220·92
Gondah	787	–	–	113·34	1·65	12·20	1·40	3·81	12·45	46·51	9·02	40·15	240·53
Fyzabad	1,254	–	–	17·46	2·15	8·69	8·69	4·63	9·49	26·87	4·31	38·28	120·57
Rae Bareilly	587	–	–	33·39	2·73	6·82	6·30	8·35	6·13	30·66	5·80	26·92	127·10
Lucknow	2,093	·09	·04	51·03	5·54	8·12	5·35	7·36	10·00	41·00	5·49	36·36	170·38
Seetapore	606	·16	·16	25·25	2·31	12·38	7·26	10·23	13·04	29·70	11·72	50·33	162·54
Allahabad	1,107	–	·09	82·57	6·23	15·54	15·00	4·33	16·62	35·50	9·75	31·71	217·34
Cawnpore	1,259	–	·24	55·36	3·34	10·09	2·86	11·28	5·16	41·14	5·32	39·94	164·65
Futtehgurh	549	–	·18	76·87	2·55	3·28	7·29	5·64	12·02	30·79	5·83	38·43	182·88
Shahjehanpore	530	·57	–	30·75	·00	3·96	3·96	3·40	6·60	32·08	4·15	26·98	112·45
Bareilly	1,096	–	·29	19·89	1·92	4·38	4·65	2·38	9·49	25·00	3·92	21·08	93·00
Moradabad	428	–	·23	57·94	3·50	15·19	4·67	19·63	16·12	42·76	7·48	39·72	207·24
Roorkee	611	–	–	60·72	7·36	14·56	2·62	9·99	9·33	29·30	7·69	35·68	177·25
Meerut	2,038	2·55	·39	42·59	7·55	16·78	5·20	4·36	7·21	46·37	6·72	40·82	180·54
Delhi	1,170	–	·17	95·81	4·96	8·71	5·04	9·40	5·90	37·70	5·13	48·37	221·19
Muttra	502	–	·20	59·36	2·19	8·16	19·12	2·99	6·37	35·45	4·18	66·16	204·18
Agra	1,153	5·72	–	145·10	4·95	8·41	9·37	6·68	9·11	24·20	7·02	28·62	249·18
Gwalior Citadel (10 months)	237	10·97	·42	76·37	9·28	26·59	6·33	7·60	5·48	7·30	1·68	28·70	190·72
Morar	1,048	6·29	·67	124·43	2·96	19·27	7·44	2·96	9·16	17·37	4·01	27·77	222·33
Jhansi	769	6·63	·39	213·39	7·02	19·90	4·68	4·81	5·85	32·25	9·50	35·50	339·92
Nowgong	251	–	·40	132·67	4·38	7·57	6·78	5·58	7·17	31·08	5·18	37·85	238·64
Saugor	832	–	·12	132·33	3·85	6·25	8·06	4·57	12·86	61·77	8·65	32·33	270·79
Nagode	236	–	–	302·12	4·24	8·48	2·12	·43	1·68	17·80	5·51	32·20	374·58
Jubbulpore	847	–	–	125·74	8·38	13·46	4·60	4·37	13·70	36·36	5·43	48·64	260·68
Umballa	1,767	·23	–	103·62	2·49	9·22	4·24	5·54	6·68	30·90	8·28	43·12	214·32
Dugshaie (9 months)	914	–	·11	34·03	3·39	11·27	1·31	2·52	6·02	12·80	4·32	20·68	96·45
Subathoo	810	–	–	11·11	1·36	13·21	3·58	2·96	7·16	28·64	6·05	33·34	107·41
Jullundur	1,165	–	–	54·76	5·84	13·91	4·29	2·49	6·61	35·36	10·73	34·16	168·15
Ferozepore	967	·52	·21	35·78	2·38	9·72	6·41	1·45	6·51	33·30	3·51	33·51	133·30
Meean Meer	1,362	9·40	·51	100·51	6·17	15·86	9·10	7·57	5·29	24·59	5·51	52·86	237·37
Lahore Citadel	154	6·49	–	69·48	7·80	27·27	7·79	2·60	14·93	21·43	7·14	50·00	214·93
Govindghur and Umritsur	532	5·64	1·50	84·77	7·89	13·34	6·20	2·07	7·71	22·75	9·59	37·22	198·68
Mooltan	1,117	·09	·09	212·97	5·91	5·91	7·70	5·64	7·79	35·90	8·95	38·41	329·36
Sealkote	1,438	·98	·14	48·68	3·27	10·22	5·56	6·67	3·76	21·70	7·86	43·04	151·88
Rawul Pindee	1,591	·06	·18	141·23	4·28	6·47	6·22	13·33	12·45	31·86	7·61	30·36	254·05
Attock	195	–	–	120·51	12·31	5·13	4·62	3·59	6·67	30·77	5·64	27·68	216·92
Nowshera	722	·28	·14	58·03	3·32	9·98	5·40	2·91	5·40	29·64	8·31	37·81	161·22
Peshawur	1,970	8·53	·36	152·95	4·11	26·09	5·18	4·01	8·32	20·96	5·54	56·55	292·60

EUROPEAN TROOPS, 1862—*continued.*

TABLE showing the PREVALENCE of SMALL-POX in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the Period of Occupation.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	Mar.	April	May.	June	July	Aug.	Sept.	Oct.	Nov.	Dec.				
Presidency Hospitals and Chinsurah Depôt.	403	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Fort William	880	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Barrackpore	768	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Berhampoae	296	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Raneegunge	462	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Debroogurh	51	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
	2,457	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Darjeeling Depôt (8 months)	105	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Darjeeling	133	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Hazareebaugh	1,101	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Dinapore	655	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Benares	1,142	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Goruckpore	483	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Gondah	787	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Fyzabad	1,254	–	–	–	–	2	1	1	–	–	–	–	–	4	—	1	—
Rae Bareilly	587	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Lucknow	2,093	–	–	1	–	–	–	–	–	–	–	–	–	1	—	–	—
Seetapore	606	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
	8,951	–	–	1	–	2	1	1	–	–	–	–	–	5	·06	1	·11
Allahabad	1,107	–	–	–	–	–	3	–	–	–	–	–	–	3	—	–	—
Allahabad General Hospital	95	–	–	–	–	1	–	–	–	–	–	–	–	1	—	–	—
Cawnpore	1,259	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Futtehgurh	549	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Shahjehanpore	530	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Bareilly	1,096	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Moradabad	428	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Loohooghat (8 months)	77	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Nynee Tal (8 months)	339	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Landour (7 months)	204	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Roorkee	611	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Meerut	2,038	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Delhi	1,170	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Muttra	502	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
	9,810	–	–	–	–	1	3	–	–	–	–	–	–	4	·05	–	—
Agra	1,153	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Gwalior Fortress (10 months)	237	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Morar	1,048	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Seepree (7 months)	164	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Jhansi	767	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Nowgong	251	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Saugor	832	–	–	–	–	–	1	–	–	–	–	–	–	1	—	1	—
Nagode	236	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Jubbulpore	847	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
	5,429	–	–	–	–	–	1	–	–	–	–	–	–	1	·02	1	·19
Umballa	1,767	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Camp Umballa	293	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Dugshaie (9 months)	914	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Subathoo	810	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Jutogh	59	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Kussowlie (7 months)	422	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Phillour (8 months)	218	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Jullundur	1,165	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Ferozepore	967	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Meean Meer	1,362	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Lahore Citadel	154	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Govindghur and Umritsur	532	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Mooltan	1,117	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Dera Ismael Khan	98	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Sealkote	1,438	–	–	–	–	–	1	–	–	–	–	–	–	1	—	–	—
Kangra (8 months)	110	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Dhurmsalla (7 months)	43	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Jhelum (7 months)	156	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Rawul Pindee	1,591	1	–	–	–	–	–	–	–	–	–	–	–	1	—	–	—
Campbellpore (6 months)	350	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Attock	195	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Nowshera	722	–	1	–	–	–	–	–	–	–	–	–	–	1	—	–	—
Peshawur	1,970	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
Murree (7 months)	296	–	–	–	–	–	–	–	–	–	–	–	–	–	—	–	—
	15,930	1	1	–	–	–	1	–	–	–	–	–	–	3	·02	–	—
BENGAL PRESIDENCY	42,980	1	1	1	–	3	6	1	–	–	–	–	–	13	·03	2	·04

EUROPEAN TROOPS, 1862—*continued.*

TABLE showing the PREVALENCE of CHOLERA in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the period of Occupation.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Presidency Hospitals and Chinsurah Depôt	403	1	–	4	1	1	–	–	–	–	–	3	5	15	–	12	–
Fort William	880	–	1	–	7	2	–	5	–	–	–	1	–	16	–	13	–
Barrackpore	768	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Berhampore	206	–	–	1	–	–	–	–	–	–	–	–	–	1	–	1	–
Raneegunge	462	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Debroogurh	51	–	–	–	–	1	–	–	–	–	–	–	–	1	–	1	–
	2,457	–	1	1	7	3	–	5	–	–	–	1	–	18	·73	15	6·11
Darjeeling Depôt (8 months)	165	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Darjeeling	133	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hazareebaugh	1,101	–	–	–	1	1	–	–	–	–	–	–	–	2	–	1	–
Dinapore	655	1	–	–	–	1	–	–	–	–	–	2	–	4	–	–	–
Benares	1,142	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–
Goruckpore	483	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Gondah	787	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fyzabad	1,254	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rae Bareilly	587	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lucknow	2,093	–	–	–	1	–	–	–	1	–	–	–	–	2	–	–	–
Seetapore	606	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–
	8,951	1	–	1	2	2	1	–	1	–	–	2	–	10	·11	1	·11
Allahabad	1,107	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Allahabad General Hospital	95	–	–	1	–	–	–	–	–	–	–	–	1	2	–	1	–
Cawnpore	1,259	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Futtehgurh	549	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Shahjehanpore	530	–	1	–	–	1	–	–	1	–	–	–	–	3	–	3	–
Bareilly	1,096	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moradabad	428	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lochooghat (8 months)	77	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nynee Tal (8 months)	339	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–
Landour (7 months)	204	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Roorkee	611	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meerut	2,038	–	–	–	1	–	1	24	26	–	–	–	–	52	–	32	–
Delhi	1,170	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Muttra	502	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	9,816	–	1	1	1	1	1	24	28	–	–	–	1	58	·59	36	3·67
Agra	1,153	–	–	–	–	–	2	1	63	–	–	–	–	66	–	49	–
Gwalior Fortress (10 months)	237	–	–	–	1	–	–	2	23	–	–	–	–	26	–	20	–
Morar	1,048	–	–	–	–	–	–	19	21	22	4	–	–	66	–	39	–
Seepree (7 months)	164	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	–
Jhansi	767	–	–	–	–	–	–	11	40	–	–	–	–	51	–	37	–
Nowgong	251	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Saugor	832	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nagode	236	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jubbulpore	847	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5,429	–	–	–	1	–	2	33	148	22	4	–	–	210	3·86	146	26·90
Umballa	1,767	–	–	–	–	4	–	–	–	–	–	–	–	4	–	2	–
Camp Umballa	293	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dugshaie (9 months)	914	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subathoo	810	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jatogh	59	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie (7 months)	422	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phillour (8 months)	218	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur	1,165	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ferozepore	997	–	–	–	–	–	–	1	4	–	–	–	–	5	–	4	–
Meean Meer	1,362	–	–	–	–	1	–	–	87	38	2	–	–	128	–	68	–
Lahore Citadel	154	–	–	–	–	–	–	–	5	4	–	–	1	10	–	5	–
Govindghur and Umritsur	532	–	–	–	2	–	–	–	11	17	–	–	–	30	–	15	–
Mooltan	1,117	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–
Dera Ismael Khan	98	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sealkote	1,438	–	–	–	–	–	–	–	5	9	–	–	–	14	–	10	–
Kangra (8 months)	110	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dhurmsalla (7 months)	43	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhelum (7 months)	156	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawul Pindee	1,591	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–
Campbellpore (6 months)	350	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Attock	195	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowshera	722	–	–	–	–	–	–	–	2	–	–	–	–	2	–	2	–
Peshawur	1,970	–	–	–	–	–	–	73	14	13	63	5	–	168	–	97	–
Murree (7 months)	296	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	15,930	–	–	–	2	6	–	74	129	81	65	5	1	363	2·28	203	12·74
BENGAL PRESIDENCY	42,980	2	2	7	14	13	4	136	306	103	69	11	7	674	1·57	413	9·61

EUROPEAN TROOPS, 1862—*continued.*

TABLE showing the MORTALITY in each STATION, the CAUSES of DEATH, and the RATIO of DEATHS to STRENGTH.

STATIONS.	Average Strength for the period of Occupation.	CAUSES OF DEATHS IN HOSPITAL.																	Number of Deaths.	DIED per 1,000 of AVERAGE STRENGTH.		
		Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.		A. Cholera.	B. Other Causes	C. All Causes
Presidency Hospitals and Chinsurah Depôt	–	12	–	–	1	–	3	3	5	–	3	10	–	1	2	–	4	–	44	–	–	–
Fort William	880	13	–	–	–	2	2	1	1	3	–	4	2	–	1	–	2	–	31	14·77	2·49	35·23
Barrackpore	768	–	–	–	–	3	–	2	–	2	1	3	2	1	2	–	2	–	18	–	16·8	16·63
Berhampore	296	1	–	1	–	1	–	–	–	1	–	–	2	–	–	–	–	–	6	3·38	16·89	20·27
Raneegunge	462	–	–	–	–	–	1	–	–	–	–	1	1	2	2	–	–	–	7	–	15·19	15·19
Debroogurh	51	1	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–	3	–	–	–
	2,457	15	–	2	–	6	3	3	1	6	1	9	7	3	5	–	4	–	65	6·11	20·34	26·45
Darjeeling Depôt (8 months)	105	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	2	–	–	–
Darjeeling	133	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	2	–	–	15·00
Hazareebaugh	1,101	1	–	–	3	3	4	–	–	–	–	2	–	–	–	1	5	–	19	·91	16·34	17·25
Dinapore	655	–	–	–	–	–	2	–	–	3	–	1	–	1	1	–	2	–	10	–	15·27	15·27
Benares	1,142	–	–	–	–	5	1	–	1	3	1	–	–	1	2	–	–	1	15	–	13·14	13·14
Goruckpore	483	–	–	2	7	8	3	–	–	2	–	3	–	–	–	–	2	–	27	–	55·90	55·90
Gondah	787	–	–	–	–	–	1	–	–	–	–	–	–	–	2	–	1	–	4	–	5·08	5·08
Fyzabad	1,254	–	1	–	–	–	–	–	–	–	–	2	–	–	1	1	2	–	7	–	5·58	5·58
Rae Bareilly	587	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	2	–	3·41	3·41
Lucknow	2,093	–	–	–	1	–	6	2	–	11	3	3	–	–	1	–	5	–	32	–	15·29	15·29
Seetapore	606	–	–	1	–	–	–	–	–	–	4	–	–	–	–	–	–	–	5	–	8 25	8 25
	8,951	1	1	3	11	16	17	2	1	19	8	12	–	2	9	2	20	1	125	·11	13·85	13·96
Allahabad	1,107	–	–	1	–	1	–	1	4	1	6	1	1	–	–	2	3	–	21	–	18·97	18·97
Allahabad General Hospital	95	1	–	–	–	–	1	1	–	1	2	1	–	–	2	1	1	–	11	–	–	–
Cawnpore	1,259	–	–	–	–	1	3	1	2	2	–	2	3	1	–	–	3	–	18	–	14·30	14·30
Futtehgurh	549	–	–	–	–	2	1	–	–	1	–	1	1	–	1	1	1	1	10	–	18·22	18·22
Shahjehanpore	530	3	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	5	5·66	3·77	9·43
Bareilly	1,096	–	–	–	–	–	–	–	–	1	1	2	–	1	1	–	–	–	6	–	5·47	5·47
Moradabad	428	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	3	–	4	–	9·34	9·34
Loohooghat (8 months)	77	–	–	–	–	–	1	–	–	–	3	–	–	–	–	–	–	–	4	–	–	–
Nynee Tal (8 months)	339	–	–	–	–	–	3	1	2	–	4	2	1	–	–	–	3	–	16	–	–	–
Landour (7 months)	204	–	–	–	–	–	1	–	1	–	3	5	–	–	2	–	4	–	16	–	–	–
Roorkee	611	–	–	1	3	1	2	–	–	2	1	1	–	–	–	–	1	–	12	–	19·64	19·64
Meerut	2,038	32	–	–	2	4	5	1	1	–	–	1	3	5	–	1	3	1	59	15·70	13·25	28·95
Delhi	1,170	–	–	2	7	–	6	1	1	6	2	1	2	–	3	–	2	–	33	–	28 20	28·20
Muttra	502	–	–	–	1	–	–	–	–	2	–	–	–	1	–	–	–	–	4	–	8 00	8·00
	9,810	36	–	4	13	10	23	6	11	16	23	17	11	8	9	5	25	2	219	3·67	18·66	22·33
Agra	1,153	49	–	–	–	3	1	–	–	1	3	3	–	1	1	–	1	1	64	42·50	13·01	55·51
Gwalior Fortress (10 months)	237	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	20	84·39	–	84·39
Morar	1,048	39	–	–	8	1	2	–	4	4	1	1	7	1	2	1	2	–	73	37·21	32·45	69·66
Seepree (7 months)	164	1	–	1	–	1	–	–	–	–	–	1	–	–	–	–	1	–	5	–	–	–
Jhansi	767	37	–	1	–	2	6	2	1	1	–	1	3	–	2	–	2	–	58	48·11	27·31	75·42
Nowgong	251	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	2	–	8·00	8·00
Saugor	832	–	1	1	–	3	–	1	–	2	1	1	–	–	2	–	1	2	15	–	18 03	18·03
Nagode	236	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	4 24	4·24
Jubbulpore	847	–	–	1	5	3	4	–	–	1	1	2	–	–	–	–	3	–	20	–	23·61	23·61
	5,429	146	1	4	13	13	13	3	5	9	6	9	11	2	7	1	12	3	258	26·90	20·62	47·52
Umballa	1,767	2	–	–	–	–	1	–	1	2	–	4	–	–	–	1	2	–	13	1·13	6 23	7·36
Camp Umballa	293	–	–	1	–	–	2	1	–	–	–	–	–	–	1	–	–	–	5	–	–	–
Dugshaie (9 months)	914	–	–	–	–	–	4	2	2	–	1	2	–	–	–	1	3	–	15	–	16·41	16·41
Subathoo	810	–	–	–	–	2	1	–	2	1	–	1	–	–	–	–	1	–	8	–	9·88	9·88
Jutogh	59	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	1	–	3	–	–	–
Kussowlie (7 months)	422	–	–	–	–	–	2	–	2	1	1	2	–	–	–	–	3	–	11	–	–	–
Phillour (8 months)	218	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur	1,165	–	–	–	–	2	1	3	–	3	–	1	–	–	1	2	1	–	14	–	12·02	12·02
Ferozepore	967	4	–	1	2	–	–	–	–	1	2	–	1	–	1	–	7	–	19	4·14	15·51	19·65
Meean Meer	1,362	68	–	–	6	5	4	1	3	5	–	3	7	–	2	–	1	–	105	49·93	27·16	77·09
Lahore Citadel	154	5	–	–	–	–	1	1	–	1	1	–	–	–	1	–	–	–	10	32·47	32·43	64·90
Govindghur and Umritsur	532	15	–	–	–	–	2	–	–	2	–	–	2	–	–	–	1	–	22	28·19	13·16	41·35
Mooltan	1,117	–	–	8	–	3	2	–	1	2	1	1	1	2	–	–	1	–	22	–	19·69	19·69
Dera Ismael Khan	98	–	–	–	–	–	–	–	1	1	–	–	2	–	–	–	–	–	4	–	–	–
Sealkote	1,438	10	–	–	1	3	–	–	–	–	–	1	1	1	–	1	1	1	20	6·94	6·94	13·88
Kangra (8 months)	110	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Dhurmsalla (7 months)	43	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–
Jhelum (7 months)	156	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawul Pindee	1,591	–	–	–	1	2	2	4	1	2	2	3	2	–	2	3	1	–	25	–	15·71	15·71
Campbellpore (6 months)	350	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Attock	195	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	2	–	–	–
Nowshera	722	2	–	–	–	–	–	–	–	1	–	1	1	–	1	1	–	–	7	2·77	6 93	9·70
Peshawur	1,970	97	–	2	2	4	3	–	1	4	1	2	5	–	–	2	1	–	124	49·24	13·70	62·94
Murree (7 months)	296	–	–	–	–	–	1	–	2	–	3	1	–	–	2	1	–	–	10	–	–	–
	15,930	203	–	12	12	24	26	12	16	27	12	23	22	3	11	12	26	1	442	12·74	15·01	27·75
BENGAL PRESIDENCY.	42,980	413	2	25	50	69	85	29	39	77	53	80	51	19	43	20	91	7	1,153	9·61	17·21	26·82

EUROPEAN TROOPS, 1862—*continued.*

TABLE showing the CAUSES of DEATH and INVALIDING.

TOTAL LOSS TO THE SERVICE BY DEATH AND INVALIDING, 2,562. PER 1,000 OF AVERAGE STRENGTH, 59·61.

NUMBER OF MEN LOST TO THE SERVICE BY DEATH, 1,208.

CAUSES OF DEATH.	Died in Hospital.	Died out of Hospital.	Died per 1,000 of Strength.
Variola	2	–	·04
Tonsillitis	1	–	–
Febris intermittens	25	–	·58
Febris remittens	50	–	1·16
Febris continua	69	–	1·60
Erysipelas	2	–	–
Pyæmia	1	–	–
Anthrax	1	–	–
Dysenteria Acuta	85	–	2·66
Dysenteria Chronica	29	–	
Diarrhœa	39	–	·91
Cholera	413	–	9·61
Rheumatismus	2	–	–
Syphilis	9	–	–
Bubo	1	–	–
Hydrophobia	2	–	–
Privatio	1	–	–
Ebriositas	4	3	–
Anœmia	2	–	–
Anasarca	3	–	–
Carcinoma	1	–	–
Scrofula	1	–	–
Morbus Coxæ	1	–	–
Phthisis Pulmonalis	80	–	1·86
Meningitis	2	–	–
Encephalitis	3	–	–
Apoplexia	51	2	1·23
Paralysis	5	–	–
Hemiplegia	1	–	–
Delirium Tremens	19	1	·46
Tetanus	3	–	
Morbus Cordis	11	3	·65
Aneurisma	9	5	
Laryngitis	3	–	
Œdema Glottidis	1	–	
Bronchitis Acuta	8	–	
Bronchitis Chronica	10	–	1·00
Pleuritis	2	–	
Pneumonia	17	–	
Asthma	2	–	
Gastritis	2	–	–
Enteritis	9	–	–
Peritonitis	11	–	–
Ileus	2	–	–
Hernia	1	–	–
Splenitis	5	–	–
Hepatitis Acuta	77	–	3·03
Hepatitis Chronica	53	–	
Icterus	3	–	–
Ascites	3	–	–
Nephritis	5	–	–
Hæmaturia	1	–	–
Synovitis	1	–	–
Asthenia	1	–	–
Not diagnosed	1	–	–
Struck by Lightning	–	1	
Drowning	–	11	
Execution	–	1	
Murder	–	1	
Suffocation	–	2	
Fracture	1	–	1·09
Concussion of Brain	4	–	
Accident	–	10	
Rupture of Spleen	–	1	
Poisoning	1	–	
Snake-bite	1	–	
Suicide	–	13	
Found dead, cause of death unknown	–	1	–
Ratio per 1,000 for deaths from causes not specially calculated	–	–	2·23
TOTAL	1,153	55	28·11

NUMBER OF MEN LOST TO THE SERVICE BY INVALIDING, 1,354.

CAUSES OF INVALIDING.	Invalided for Discharge from the Service.	Invalided for Change of Climate.	Invalided per 1,000 of Strength.
Febris	23	52	1·74
Ophthalmia	32	40	1·68
Erysipelas	–	1	–
Dysenteria	6	38	1·46
Diarrhœa	1	18	
Rheumatismus	136	98	5·45
Syphilis	26	67	2·28
Strictura Urethræ	1	4	
Purpura	–	1	–
Anasarca	–	4	–
Scirrhoma	–	2	–
Scrofula	8	6	–
Phthisis Pulmonalis	50	24	1·88
Hæmoptysis	1	6	
Apoplexia	–	2	–
Paralysis	8	1	–
Mania	7	5	·74
Dementia	15	5	
Epilepsia	18	5	·54
Cephalæa	2	5	–
Dysecœa	7	1	–
Neuralgia	2	–	–
Pericarditis	1	5	
Morbis Cordis	31	28	
Aneurisma	2	1	1·68
Palpatatio	2	1	
Angina pectoris	–	1	
Varix	9	4	–
Bronchitis	14	17	
Pleuritis	1	4	
Pneumonia	–	2	·93
Asthma	–	1	
Emphysema	–	1	
Gastritis	–	1	–
Peritonitis	–	1	–
Dyspepsia	2	12	–
Hernia	6	1	–
Hæmorrhois	1	3	–
Fistula in ano	–	1	–
Splenitis	2	7	–
Hepatitis	52	156	4·84
Icterus	–	2	–
Nephria	1	–	–
Cystitis	–	1	–
Hæmaturia	–	1	–
Fistula in perineo	–	1	–
Orchitis	–	5	–
Synovitis	5	3	–
Caries	1	–	–
Necrosis	–	4	–
Exostosis	1	1	–
Contractura	4	–	–
Psoriasis	–	1	–
Abscess	3	1	–
Ulcer	2	16	–
Debilitas (worn out)	65	107	4·00
Injury	22	7	·67
Ratio per 1,000 for Invaliding from causes not specially calculated	–	–	3·61
TOTAL	572	782	31·50

EUROPEAN TROOPS, 1863.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Bengal* Presidency during the Year 1863, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January - -	41,665	2,612	6·27	67	—	2	—	4	—	3	5	4	5	7	1	8	1	—	11	3	11	2
February -	41,482	2,578	6·21	36	—	—	—	2	1	2	3	1	1	7	2	6	1	—	1	3	5	1
March - -	41,525	2,520	6·07	37	—	—	—	1	2	1	3	—	1	7	4	7	—	1	2	1	8	—
April - -	42,249	2,752	6·51	69	—	16	3	1	3	7	1	4	2	6	4	8	1	2	2	1	8	1
May - -	42,311	3,124	7·39	48	—	2	4	1	1	5	5	1	2	3	1	5	5	2	3	4	4	—
June - -	42,266	3,108	7·35	69	—	2	2	2	4	4	5	1	2	5	7	7	12	6	2	1	4	3
July - -	42,043	3,268	7·77	139	—	69	1	3	3	8	5	—	3	5	5	8	7	1	2	5	14	—
August - -	41,919	3,510	8·37	128	—	57	—	3	5	8	17	5	1	6	2	6	8	2	—	1	7	—
September -	41,481	3,515	8·47	102	—	10	—	6	5	8	16	3	3	12	5	6	6	3	3	3	13	—
October - -	40,565	3,039	7·49	116	—	9	—	5	7	3	20	3	5	23	10	12	3	1	3	1	10	1
November -	39,428	2,485	6·30	56	—	1	—	1	2	—	10	2	4	7	8	6	1	—	3	1	9	1
December -	39,272	2,030	5·17	63	—	1	—	2	3	2	6	1	4	4	9	10	—	2	7	2	6	4
						169	10	30	36	51	96	25	33	92	58	89	45	20	39	25	99	13
						Died per 1,000 of Average Strength.																
	41,351	2,879	6,96	930	22·49	4·09	·24	·72	·87	1·23	2·33	·61	·79	2·23	1·41	2·15	1·09	·48	·94	·61	2·39	·31

Deaths out of Hospital, 107. Died per 1,000 of Average Strength, 2·59.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera - - - -	4	1	3	17	3	2	101	69	10	11	3	1	225	·55	75·11
Small-pox - - - -	—	1	1	20	15	7	1	—	—	—	—	—	45	·11	22·22
Intermittent Fevers - -	1,258	751	757	1,300	1,697	1,802	2,629	2,505	3,613	4,013	2,627	1,667	24,619	73·90	·38
Remittent Fevers - -	15	12	29	81	174	203	396	292	302	233	71	21	1,829		
Continued Fevers - -	76	97	161	462	543	587	644	451	621	308	99	62	4,111		
Dysentery - - - -	115	102	88	158	152	132	218	294	244	204	147	161	2,015	4·87	6·06
Diarrhœa - - - -	182	149	189	366	237	200	727	732	408	342	230	217	3,979	9·62	·83
Hepatitis - - - -	132	156	180	220	225	289	329	267	234	287	162	152	2,633	6·37	5·69
Ophthalmia - - -	149	149	232	289	166	150	195	163	161	162	100	121	2,037	4·93	—
Rheumatism - - -	286	294	296	336	270	300	388	357	310	363	294	296	3,790	9·17	—
Venereal Diseases - -	1,298	1,037	1,131	1,433	965	849	919	697	717	879	811	914	11,650	28·17	—
Phthisis Pulmonalis - -	46	12	17	28	26	25	38	30	37	29	21	19	328	·79	27·13
Heat Apoplexy - - -	1	5	3	3	11	16	27	16	5	4	3	—	94	·23	47·87
Delirium Tremens - -	7	4	8	13	15	12	20	17	20	19	10	6	151	·36	13·24
Epilepsy - - - -	12	14	13	9	11	11	16	17	12	16	5	15	151	·36	—
Respiratory Diseases - -	273	203	229	251	254	253	348	207	218	284	204	246	2,970	7·18	1·31
Abscess and Ulcer - -	265	284	301	422	341	400	481	374	319	378	252	306	4,123	9·97	—
Wounds and Accidents -	288	255	309	357	297	289	318	269	272	331	477	398	3,860	9·34	—
All other Diseases - -	508	427	542	703	665	652	892	766	659	708	442	447	7,411	17·92	·42
	4,915	3,953	4,489	6,468	6,067	6,179	8,687	7,523	8,162	8,571	5,958	5,049	76,021		
	Admitted per Cent. of Average Strength in each Month.														
	11·80	9·53	10·81	15·31	14·34	14·62	20·66	17·95	19·68	21·13	15·11	12·86	183·84.		

EUROPEAN TROOPS, 1863—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in *Bengal* Proper during the Year 1863, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January -	2,311	123	5·32	6	—	—	—	1	—	—	1	1	1	—	—	—	—	—	—	1	1	—
February -	2,313	133	5·75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
March - -	2,401	136	5·66	3	—	—	—	—	—	1	1	—	—	—	—	—	—	1	—	—	—	—
April - -	2,196	113	5·15	4	—	2	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—
May - -	2,032	135	6·64	3	—	1	1	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—
June - -	2,024	149	7·36	6	—	—	—	—	1	1	1	—	—	—	—	—	2	—	—	—	1	—
July - -	1,940	156	8·04	4	—	—	—	—	—	—	1	—	—	1	—	1	—	1	—	—	—	—
August - -	1,980	175	8·84	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
September -	1,952	183	9·37	6	—	1	—	—	—	1	2	—	—	1	—	—	—	—	—	—	1	—
October - -	1,213	88	7·25	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
November -	1,217	73	6·00	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
December -	1,137	63	5·54	3	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—	1
						6	1	1	1	4	8	1	1	2	—	1	2	4	1	1	4	1
						Died per 1,000 of Average Strength.																
	1,893	127	6·71	39	20·60	3·17	·53	·53	·53	2·11	4·21	·53	·53	1·06	—	·53	1·06	2·11	·53	·53	2·11	·53

DISEASES.	Number of Admissions into Hospitals in each Month. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera - - - -	—	1	1	2	—	—	1	—	1	2	1	—	9	·48	66·66
Small-pox - - - -	—	—	—	—	1	—	—	—	—	—	—	—	1	·05	—
Intermittent Fevers - -	66	27	50	56	77	96	173	175	146	72	36	31	1,005	59·17	·45
Remittent Fevers - -	2	—	—	—	—	—	—	1	—	—	—	—	3		
Continued Fevers - -	5	15	15	7	4	2	38	10	7	5	2	2	112		
Dysentery - - - -	6	16	8	18	30	21	19	19	27	17	3	6	190	10·04	5·26
Diarrhœa - - - -	20	23	26	29	16	9	26	25	25	9	8	16	232	12·25	·43
Hepatitis - - - -	7	9	7	6	10	4	21	24	7	11	8	3	117	6·18	1·71
Ophthalmia - - -	8	12	13	7	7	6	8	2	7	2	2	1	75	3·96	—
Rheumatism - - -	21	14	20	19	9	11	10	7	12	11	1	4	139	7·34	—
Venereal Diseases - -	48	46	36	58	29	25	31	30	13	16	15	25	372	19·65	—
Phthisis Pulmonalis - -	3	—	—	1	1	3	—	1	6	1	1	1	18	·95	—
Heat Apoplexy - - -	—	—	1	—	—	2	—	—	—	—	—	—	3	·16	66·66
Delirium Tremens - -	—	—	—	1	1	—	2	1	1	—	1	2	9	·47	44·44
Epilepsy - - - -	—	—	—	—	—	—	—	2	—	3	—	1	6	·32	—
Respiratory Diseases - -	19	20	22	9	26	22	21	17	7	4	4	4	175	9·25	·57
Abscess and Ulcer - -	23	20	20	17	12	23	12	18	17	12	7	9	190	10·04	—
Wounds and Accidents -	23	17	21	21	20	16	17	9	9	10	12	13	188	9·93	—
All other Diseases - -	29	33	54	24	34	28	38	37	51	32	11	19	390	20·60	·44
	280	253	294	275	277	268	417	378	336	207	112	137	3,234		
	Admitted per Cent. of Average Strength in each Month.														
	12·12	10·94	12·24	12·53	13·63	13·24	21·49	19·09	17·21	17·06	9·20	12·05	170·84		

Six Men, belonging to regiments stationed in Lower Bengal, died on board the Hospital Ship "Bentinck," during the year. These deaths are not included in this table.

EUROPEAN TROOPS, 1863—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Dinapore*, *Benares*, and *Oude* Districts during the Year 1863, and the prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	8,250	470	5·70	10	–	1	–	–	–	1	1	–	–	2	1	1	–	–	1	–	2	–
February	8,438	522	6·18	3	–	–	–	–	–	–	1	–	–	1	1	–	–	–	–	–	1	–
March	8,294	527	6·35	8	–	–	–	–	–	–	–	–	–	3	1	–	–	–	2	–	2	–
April	8,838	609	6·89	24	–	12	1	–	–	2	–	–	–	3	1	1	–	–	1	–	2	1
May	8,916	651	7·30	7	–	–	1	–	–	–	–	–	–	–	–	2	–	–	2	–	2	–
June	8,928	649	7·27	15	–	1	–	–	–	1	3	–	–	–	3	3	2	1	1	–	–	–
July	8,892	646	7·26	38	–	30	–	–	–	–	2	–	–	2	2	–	–	–	–	1	1	–
August	8,849	645	7·29	23	–	13	–	–	2	1	–	–	–	2	–	2	2	–	–	–	1	–
September	8,812	628	7·13	17	–	4	–	1	–	–	1	–	1	2	1	3	1	1	–	–	2	–
October	8,780	578	6·58	23	–	5	–	–	1	1	2	1	–	7	1	2	–	–	–	–	2	1
November	8,519	484	5·68	8	–	–	–	–	–	–	1	–	1	3	1	2	–	–	–	–	–	–
December	8,254	413	5·00	12	–	–	–	–	2	–	1	–	–	2	1	–	–	–	3	1	2	–
						66	2	1	5	6	12	1	2	27	13	16	5	2	10	2	16	2
						Died per 1,000 of Average Strength.																
	8,647	570	6·59	188	21·74	7·63	·23	·12	·58	·70	1·39	·12	·23	3·12	1·50	1·85	·58	·23	1·15	·23	1·85	·23

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	1	–	2	13	–	1	52	18	3	7	–	–	97	1·12	68·04
Small-pox	–	–	–	2	–	1	–	–	–	–	–	–	3	·03	—
Intermittent Fevers	162	150	164	274	343	386	491	388	410	304	142	97	3,311	47·57	·29
Remittent Fevers	6	5	11	23	20	28	57	23	47	26	5	3	254		
Continued Fevers	17	13	24	113	77	84	117	30	25	20	20	9	549		
Dysentery	13	14	28	39	36	33	55	53	37	40	17	25	390	4·51	3·33
Diarrhœa	25	42	50	80	54	32	164	141	82	82	46	33	831	9·61	·24
Hepatitis	23	27	39	51	38	52	54	47	47	78	28	30	514	5·95	7·78
Ophthalmia	17	30	43	57	45	39	44	34	31	45	23	29	437	5·05	—
Rheumatism	36	54	63	62	68	70	85	64	76	96	57	54	785	9·08	—
Venereal Diseases	242	219	218	298	184	222	199	171	200	210	223	217	2,603	30·10	—
Phthisis Pulmonalis	3	3	4	6	5	8	1	2	8	3	1	1	45	·52	35·55
Heat Apoplexy	–	2	–	1	2	2	–	4	–	–	–	–	11	·13	45·45
Delirium Tremens	–	1	2	2	1	3	3	5	8	1	3	3	32	·37	6·25
Epilepsy	1	–	1	4	2	2	3	2	4	1	–	2	22	·25	—
Respiratory Diseases	50	37	52	52	44	47	87	39	51	55	37	44	595	6·88	1·68
Abscess and Ulcer	43	56	59	91	87	83	85	77	63	71	50	62	827	9·57	—
Wounds and Accidents	60	38	61	80	58	41	73	59	52	66	79	80	747	8·64	—
All other Diseases	85	103	118	148	135	153	186	153	135	172	97	92	1,577	18·24	·29
	784	794	939	1,396	1,199	1,287	1,756	1,310	1,279	1,277	828	781	13,630		
	Admitted per Cent. of Average Strength in each Month.														
	9·50	9·41	11·32	15·79	13·44	14·41	19·74	14·79	14·51	14·54	9·72	9·45	157·62		

EUROPEAN TROOPS, 1863—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Cawnpore, Meerut,* and *Rohilcund* Districts during the Year 1863, and the prevalence of the Principal Diseases in each month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	9,274	694	7·48	22		–	–	–	–	–	–	1	4	2	–	3	1	–	4	1	5	1
February	9,473	727	7·67	13		–	–	1	1	1	1	1	–	4	–	3	–	–	–	1	3	
March	9,467	664	7·01	10		–	–	–	1	–	1	–	–	3	1	3	–	–	–	–	1	
April	9,591	781	8·14	15		1	2	–	1	–	1	2	1	1	2	2	–	1	–	–	1	
May	9,568	830	8·67	12		1	2	–	1	–	2	–	–	–	–	1	3	1	–	–	1	
June	9,518	819	8·60	17		1	2	–	1	1	–	–	1	2	3	2	3	1	–	–	–	
July	9,497	849	8·94	52		30	–	2	1	1	2	–	2	1	1	4	2	–	–	–	6	
August	9,424	903	9·58	48		31	–	1	2	1	2	–	1	1	–	3	2	1	–	1	2	
September	9,398	863	9·18	31		5	–	2	3	1	4	3	1	2	1	1	1	1	–	–	6	
October	9,351	743	7·94	22		1	–	–	1	–	3	2	1	5	3	3	–	–	1	–	2	
November	8,349	544	6·52	12		–	–	–	–	–	–	–	–	2	3	2	–	–	1	–	3	1
December	7,594	412	5·43	11		–	–	–	–	1	–	1	1	–	4	2	–	–	1	–	1	–
						70	6	6	12	6	16	10	12	23	18	26	12	5	7	3	31	2
						Died per 1,000 of Average Strength.																
	9,209	736	7·99	265	28·78	7·61	·65	·65	1·30	·65	1·74	1·09	1·30	2·50	1·96	2·82	1·30	·54	·76	·32	3·37	·22

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	3	–	–	1	3	–	27	39	6	1	–	–	80	·87	87·50
Small-pox	–	–	1	17	12	6	–	–	–	–	–	–	36	·39	16·66
Intermittent Fevers	169	87	108	231	232	304	454	389	401	344	122	86	2,927		
Remittent Fevers	2	3	6	15	73	43	52	90	81	43	10	5	423	46·23	·56
Continued Fevers	15	18	35	134	167	123	149	96	113	30	13	14	907		
Dysentery	35	26	16	35	33	33	47	64	53	36	25	20	423	4·59	6·15
Diarrhœa	39	23	34	102	56	52	221	178	90	80	41	47	963	10·46	1·24
Hepatitis	21	27	32	40	46	69	68	50	56	54	38	27	528	5·73	7·77
Ophthalmia	46	44	59	64	40	33	43	41	48	40	21	24	503	5·46	—
Rheumatism	64	68	72	77	57	82	93	84	79	74	65	46	861	9·35	—
Venereal Diseases	331	249	313	377	244	202	238	162	186	260	234	232	3,028	32·89	—
Phthisis Pulmonalis	7	3	4	8	9	3	11	9	5	8	8	2	77	·84	33·77
Heat Apoplexy	–	1	1	1	6	3	5	4	1	–	1	–	23	·25	52·15
Delirium Tremens	2	1	–	1	4	2	6	3	3	2	–	–	24	·26	20·80
Epilepsy	2	3	6	1	4	3	2	3	3	6	1	4	38	·41	—
Respiratory Diseases	48	43	39	58	52	64	99	54	52	76	49	42	676	7·34	1·04
Abscess and Ulcer	66	72	84	95	80	94	105	79	69	99	53	80	976	10·59	—
Wounds and Accidents	64	51	67	61	65	70	68	56	75	76	78	48	779	8·46	—
All other Diseases	113	78	96	187	181	159	235	202	166	166	113	84	1,780	19·33	·45
	1,027	797	973	1,505	1,364	1,345	1,923	1,603	1,487	1,395	872	761	15,052		
	Admitted per Cent. of Average Strength in each Month.														
	11·07	8·41	10·28	15·69	14·25	14·13	20·25	17·01	15·82	14·92	10·45	10·02	163·45		

EUROPEAN TROOPS, 1863—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Agra* District and in *Central India* during the Year 1863, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January	5,226	306	5·85	5		–	–	1	–	–	–	–	–	1	–	–	–	–	2	–	1	–
February	5,085	323	5·68	6		–	–	–	–	1	1	–	1	2	–	–	1	–	–	–	–	–
March	5,695	307	5·39	4		–	–	–	1	–	1	–	–	1	–	–	–	–	–	–	1	–
April	5,580	379	6·79	8		–	–	–	–	3	–	–	–	2	–	2	–	–	1	–	–	–
May	5,567	421	7·56	4		–	–	–	–	1	1	–	–	1	–	–	–	–	–	–	1	–
June	5,564	401	7·21	5		–	–	–	–	–	–	–	1	–	–	–	2	2	–	–	–	–
July	5,562	399	7·17	17		9	1	–	1	1	–	–	–	–	1	1	1	–	–	1	1	–
August	5,530	445	8·05	23		12	–	–	1	1	4	1	–	–	–	1	–	1	–	–	2	–
September	5,500	466	8·47	19		–	–	1	–	4	3	–	–	3	–	–	1	1	2	3	1	–
October	5,448	410	7·53	18		–	–	1	3	–	4	–	1	6	1	–	1	–	–	–	1	–
November	5,309	346	6·52	5		–	–	–	–	–	2	–	–	–	1	–	–	–	1	1	–	–
December	5,248	276	5·26	6		–	–	–	–	–	–	–	–	1	–	1	–	–	2	1	–	1
						21	1	3	6	11	16	1	3	17	3	5	6	4	8	6	8	1
						Died per 1,000 of Average Strength.																
	5,493	373	6·79	120	21·85	3·82	·18	·55	1·09	2·00	2·92	·18	·55	3·09	·55	·91	1·09	·73	1·46	1·09	1·46	·18

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	–	–	–	1	21	11	–	–	–	–	33	·60	63·64
Small-pox	–	1	–	1	–	–	1	–	–	–	–	–	3	·05	33·33
Intermittent Fevers	177	117	129	228	181	172	372	317	450	491	329	206	3,169	73·82	·49
Remittent Fevers	–	1	2	25	15	2	6	18	22	9	1	–	101		
Continued Fevers	16	28	39	78	64	77	94	103	140	91	32	23	785		
Dysentery	16	17	17	31	18	18	35	61	46	36	16	17	328	5·98	5·18
Diarrhœa	27	26	29	43	24	25	139	147	51	49	29	10	599	10·91	·50
Hepatitis	19	17	28	27	24	24	36	31	23	36	13	15	293	5·33	6·82
Ophthalmia	16	18	25	14	16	9	25	20	23	24	11	10	211	3·84	—
Rheumatism	40	40	47	51	48	51	64	67	54	65	46	45	618	11·25	—
Venereal Diseases	192	166	170	245	157	152	160	130	113	125	122	145	1,877	34·17	—
Phthisis Pulmonalis	2	–	3	2	–	2	5	1	4	4	2	–	25	·46	20·00
Heat Apoplexy	–	1	–	–	–	3	1	1	1	2	1	–	10	·18	60·00
Delirium Tremens	3	2	1	1	1	4	3	3	3	2	2	1	26	·47	15·38
Epilepsy	–	1	2	–	–	3	4	4	3	2	–	2	21	·38	—
Respiratory Diseases	41	27	42	51	52	25	33	36	33	55	33	29	457	8·32	1·75
Abscess and Ulcers	50	32	52	57	56	73	61	44	45	68	39	35	612	11·14	—
Wounds and Accidents	24	27	36	47	29	34	33	28	33	41	25	41	398	7·25	—
All other Diseases	54	55	61	77	69	66	94	88	98	98	51	68	879	16·00	·32
	677	576	683	978	754	741	1,187	1,110	1,142	1,198	752	647	10,445		
	Admitted per Cent. of Average Strength in each Month.														
	12·95	10·13	11·99	17·53	13·54	13·32	21·34	20·07	20·76	21·99	14·16	12·33	190·15		

EUROPEAN TROOPS, 1863—*continued.*

TABLE, showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Punjab* during the Year 1863, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATH. Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.
January - -	15,256	809	5·30	16	–	–	–	2	–	1	2	2	–	1	–	1	–	–	3	1	2	1
February -	15,168	772	5·09	10	–	–	–	1	–	–	–	–	1	–	1	3	–	–	1	2	1	1
March - -	15,591	864	5·54	9	–	–	–	–	–	–	–	–	1	–	2	1	–	–	–	1	4	–
April - -	15,973	853	5·34	17	–	–	–	1	2	2	–	2	1	–	1	3	1	–	–	–	4	–
May - -	16,088	1,060	6·59	21	–	–	–	1	–	4	2	–	2	2	1	2	2	1	–	4	–	–
June - -	16,011	1,063	6·64	26	–	–	–	2	2	1	1	1	–	3	1	2	3	2	1	1	3	3
July - -	15,889	1,195	7·52	27	–	–	–	1	1	6	–	–	1	1	1	2	4	–	2	3	5	–
August - -	15,878	1,316	8·29	29	1	–	–	2	–	5	10	1	–	3	2	–	4	–	–	–	1	–
September -	15,563	1,328	8·53	28	–	–	–	2	2	2	6	–	–	1	4	2	2	3	–	1	3	–
October - -	15,427	1,171	7·59	49	1	–	–	4	2	2	11	2	3	5	4	7	2	1	2	1	4	–
November -	15,559	985	6·33	24	–	–	–	1	2	–	6	2	2	2	2	–	1	–	1	–	5	–
December -	15,519	765	4·93	28	–	–	–	2	1	–	4	–	3	1	4	7	–	1	1	–	2	2
						2	–	19	12	23	42	8	14	22	21	30	20	5	12	13	34	7
						Died per 1,000 of Average Strength.																
	15,660	1,015	6·48	284	18·14	·13	–	1·21	·77	1·47	2·68	·51	·89	1·40	1·34	1·92	1·28	·32	·77	·83	2·17	·45

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera - - - -	–	–	–	–	–	–	–	1	–	1	–	–	2	·01	100·00
Small-pox - - - -	–	–	–	–	2	–	–	–	–	–	–	–	2	·01	—
Intermittent Fevers - -	641	363	304	509	862	842	1,135	1,222	2,200	2,779	1,991	1,233	14,081		
Remittent Fevers - -	5	3	10	18	66	130	281	160	149	154	54	12	1,042	107·57	·32
Continued Fevers - -	11	23	45	130	228	300	246	208	329	160	31	11	1,722		
Dysentery - - - -	32	25	19	35	30	22	54	93	77	65	77	81	610	3·89	8·20
Diarrhœa - - - -	56	30	48	109	80	81	176	235	157	112	101	80	1,265	8·08	1·11
Hepatitis - - - -	51	68	73	94	105	135	145	111	92	97	72	65	1,108	7·07	3·88
Ophthalmia - - -	42	43	92	146	57	63	70	64	52	48	40	47	764	4·88	—
Rheumatism - - -	98	109	93	123	87	85	133	129	85	104	117	122	1,285	8·21	—
Venereal Diseases - -	418	338	390	451	340	244	286	199	196	253	210	225	3,550	22·67	—
Phthisis Pulmonalis - -	5	2	4	11	8	7	15	16	9	9	5	7	98	·63	30·61
Heat Apoplexy - - -	1	1	1	1	3	6	21	7	3	2	1	–	47	·30	42·55
Delirium Tremens - -	2	–	5	8	8	3	6	5	5	14	3	–	59	·38	8·47
Epilepsy - - - -	4	9	4	4	4	1	7	6	2	3	3	2	49	·31	—
Respiratory Diseases - -	105	72	74	77	79	94	100	59	69	88	77	106	1,000	6·38	1·20
Abscess and Ulcer - -	73	103	85	162	106	125	215	155	118	122	97	91	1,452	9 27	—
Wounds and Accidents -	106	118	123	148	123	127	127	115	102	135	279	203	1,706	10·90	—
All other Diseases - - -	141	143	208	262	234	242	332	281	199	224	155	152	2,573	16·43	·47
	1,791	1,450	1,578	2,288	2,422	2,507	3,349	3,066	3,844	4,370	3,313	2,437	32,415		
	Admitted per Cent. of Average Strength in each Month.														
	11·74	9·56	10·12	14·32	15·05	15·66	21·07	19·31	24·70	28·33	21·29	15·71	206·99		

EUROPEAN TROOPS, 1863—*continued.*

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the European Troops serving in the various Provinces of the *Bengal* Presidency during the Year 1863.

DISEASES.	BENGAL PROPER. Average Strength - 1,893; Daily Sick per Cent. of Strength - 6·71; Admitted per Cent. of Strength - 170·84; Died per 1,000 of Strength— A. From Cholera - 3·17; B. From all Causes - 20·60			DINAPORE, BENARES, AND OUDE. Average Strength - 8,647; Daily Sick per Cent. of Strength - 6·59; Admitted per Cent. of Strength - 157·62; Died per 1,000 of Strength— A. From Cholera - 7·63; B. From all Causes 21·74			CAWNPORE AND MEERUT. Average Strength - 9,209; Daily Sick per Cent. of Strength - 7·99; Admitted per Cent. of Strength - 163·45; Died per 1,000 of Strength— A. From Cholera - 7·61; B. From all Causes 28·78			AGRA AND CENTRAL INDIA. Average Strength - 5,493; Daily Sick per Cent. of Strength - 6·79; Admitted per Cent. of Strength - 190·15; Died per 1,000 of Strength— A. From Cholera - 3·82; B. From all Causes 21·85			PUNJAB. Average Strength - 15,660; Daily Sick per Cent. of Strength - 6·48; Admitted per Cent. of Strength - 206·99; Died per 1,000 of Strength— A. From Cholera - ·13; B. From all Causes - 18·14			BENGAL PRESIDENCY. Average Strength - 41,351; Daily Sick per Cent. of Strength - 6·96; Admitted per Cent. of Strength - 183·84; Died per 1,000 of Strength— A. From Cholera - 4·09; B. From all Causes 22·49		
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.
Cholera	·48	66·66	3·17	1·12	68·04	7·63	·87	87·50	7·61	·60	63·64	3·82	·01	100·00	·13	·55	75·11	4·09
Small-pox	·05	–	·53	·03	–	·23	·39	16·66	·65	·05	33·33	·18	·01	–	–	·11	22·22	·24
Fevers	59·17	·45	3·17	47·57	·29	1·40	46·23	·56	2·60	73·82	·49	3·64	107·57	·32	3·45	73·90	·38	2·82
Dysentery	10·04	5·26	4·74	4·51	3·33	1·51	4·59	6·15	2·83	5·98	5·18	3·10	3·89	8·20	3·19	4·87	6·06	2·94
Diarrhœa	12·25	·43	·53	9·61	·24	·23	10·46	1·24	1·30	10·91	·50	·55	8·08	1·11	·89	9·62	·83	·79
Hepatitis	6·18	1·71	1·06	5·95	7·78	4·62	5·73	7·77	4·46	5·33	6·82	3·64	7·07	3·88	2·74	6·37	5·69	3·64
Ophthalmia	3·96	–	–	5·05	–	–	5·46	–	–	3·84	–	–	4·88	–	–	4·93	–	–
Rheumatism	7·34	–	–	9·08	–	–	9·35	–	–	11·25	–	–	8·21	–	–	9·17	–	–
Venereal Diseases	19·65	–	–	30·10	–	–	32·89	–	–	34·17	–	–	22·07	–	–	28·17	–	–
Phthisis Pulmonalis	·95	–	·53	·52	35·55	1·85	·84	33·77	2·82	·46	20·00	·91	·63	30·61	1·92	·79	27·13	2·15
Heat Apoplexy	·16	66·66	1·06	·13	45·45	·58	·25	52·15	1·30	·18	60.00	1·09	·30	42·55	1·28	·23	47·87	1·09
Delirium Tremens	·47	44·44	2·11	·37	6·25	·23	·26	20·80	·54	·47	15·38	·73	·38	8·47	·32	·36	13·24	·48
Epilepsy	·32	–	–	·25	–	–	·41	–	–	·38	–	–	·31	–	–	·36	–	–
Respiratory Diseases	9·25	·57	·53	6·88	1·68	1·15	7·34	1·04	·76	8·32	1·75	1·46	6·38	1·20	·77	7·18	1·31	·94
Abscess and Ulcer	10·04	–	–	9·57	–	–	10·59	–	–	11·14	–	–	9·27	–	–	9·97	–	–
Wounds and Accidents	9·93	–	·53	8·64	–	·23	8·46	–	·22	7·25	–	·18	10·90	–	·45	9·34	–	·31
All other Diseases	20·60	·44	2·64	18·24	·29	2·08	19·33	·45	3·69	16·00	·32	2·55	16·43	·47	3·00	17·92	·42	3·10
	170·84	–	20·60	157·62	–	21·74	163·45	–	28·78	190·15	–	21·85	206·99	–	18·14	183·84	–	22·49

EUROPEAN TROOPS, 1863—*continued.*

TABLE showing the GENERAL STATISTICS of SICKNESS and MORTALITY in the Principal MILITARY STATIONS of the *Bengal* Presidency.

STATIONS.	PERIOD OF OBSERVATION.	Average Strength during period of Observation.	DAILY SICK PER CENT. OF AVERAGE STRENGTH IN EACH MONTH.											Daily Sick per Cent. of Average Strength for the Year.	Number of Admissions into Hospital.	Admitted per Cent. of Average Strength.	NUMBER OF DEATHS.		DIED PER 1,000 OF AVERAGE STRENGTH.		
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				A. Cholera.	B. All other Causes.	A. Cholera.	B. All other Causes.	A. All Causes.
Fort William	- - - -	745	4·68	6·09	5·56	4·50	8·01	9·17	8·92	9·41	8·12	8·61	8·37	7·79	7·40	1,290	173·14	4	13	5·37	17·45	22·82
Dum-Dum	9 months, January to Sept.	648	5·70	6·75	6·51	7·34	5·97	6·05	7·39	10·35	11·62	–	–	–	7·30	753	116·20	1	7	1·54	10·81	12·35
Barrackpore	- - - -	439	5·73	4·08	4·62	3·82	3·86	5·12	6·77	4·65	4·81	3·48	2·89	2·93	4·41	742	169·02	1	8	2·28	18·22	20·50
Berhampore	- - - -	223	5·51	5·10	5·17	4·29	8·65	8·37	9·23	12·19	17·50	10·19	5·10	4·08	7·75	449	201·33	–	5	–	22·42	22·42
Darjeeling	- - - -	246	3·09	7·07	6.64	5·28	6·10	6·10	5·28	2·88	1·65	1·65	2·06	1·70	4·23	246	100·00	–	3	–	12·19	12·19
Hazareebaugh	- - - -	730	8·25	8·77	9·92	10·17	11·28	11·44	10·65	12·67	10·59	10·19	7·33	6·14	9·80	1,256	172·06	3	13	4·11	17·81	21·92
Dinapore	- - - -	925	6·40	5·60	5·51	5·82	6·13	5·36	6·90	6·95	7·24	6·26	7·05	6·00	6·30	1,483	160·32	3	8	3·24	8·65	11·89
Benares and Raj Ghat	- - - -	1,210	6·85	7·58	7·30	7·35	9·00	9·05	9·97	8·10	11·91	10·55	5·56	5·16	7·91	2,456	202·98	35	16	28·93	13·22	42·15
Azimghur and Jounpore	6 months, April to October	336	–	–	–	5·09	5·73	4·31	4·52	5·67	6·09	5·09	–	–	5·17	236	62·50	–	1	–	2·98	2·98
Gondah	- - - -	815	4·18	5·02	6·56	6·74	7·54	5·53	4·40	5·13	4·90	4·00	3·99	5·23	5·28	999	122·58	–	10	–	12·27	12·27
Fyzabad	- - - -	1,073	6·02	7·12	6·43	7·13	8·20	8·59	8·06	6·81	6·85	6·82	7·93	5·66	7·13	2,129	198·41	–	15	–	13·98	13·98
Roy Bareilly	10 months, January to October	402	2·00	2·00	2·84	4·33	4·05	3·00	3·80	4·75	5·56	6·53	–	–	3·88	276	68·65	–	3	–	7·46	7·46
Lucknow	- - - -	2,420	5·83	5·74	5·81	6·69	6·33	6·95	7·00	7·29	6·63	6·31	5·48	4·08	6·20	3,568	147·42	25	44	10·33	18·18	28·51
Seetapore	- - - -	592	3·16	4·18	4·59	5·45	5·88	6·49	6·89	8·27	4·58	3·80	3·63	5·15	5·20	753	127·19	–	4	–	6·76	6·76
Allahabad	- - - -	1,054	7·30	8·77	7·56	9·15	9·06	8·86	9·38	11·57	9·36	12·25	9·73	5·47	9·01	1,764	167·24	44	39	41·75	37·00	78·75
Cawnpore	- - - -	1,162	3·90	4·22	5·11	5·88	6·94	5·91	6·86	5·43	6·11	6·31	6·32	6·82	5·94	1,601	137·78	·24	22	20·65	18·94	39·59
Futtehgurh	- - - -	567	9·15	8·22	8·41	8·32	10·46	9·22	10·48	11·03	11·21	8·38	5·69	5·06	8·82	726	128·04	–	5	–	8·82	8·82
Shahjehanpore	- - - -	539	4·16	3·80	4·19	5·51	7·00	7·73	7·03	7·96	7·63	6·00	4·95	4·31	5·94	556	103·15	–	7	–	13·00	13·00
Bareilly	- - - -	916	6·02	8·25	8·07	6·73	5·57	5·71	5·68	5·58	6·59	6·48	4·49	3·93	6·11	1,091	119·10	–	12	–	13·10	13·10
Roorkee	- - - -	587	5·22	5·14	3·62	4·02	5·53	5·70	5·60	6·59	6·15	4·50	3·43	5·55	5·11	747	127·23	–	7	–	11·92	11·92
Moradabad	- - - -	393	5·53	4·87	7·04	7·45	9·46	9·28	8·00	11·48	10·36	6·92	4·01	4·30	7·39	600	152·67	–	3	–	7·63	7·63
Meerut	- - - -	2,024	6·89	6·71	7·60	8·32	7·15	6·96	7·78	8·77	7·96	7·46	6·73	3·70	7·16	3,122	154·25	–	27	–	13·34	13·34
Delhi	- - - -	1,066	10·70	9·37	3·51	6·97	10·40	10·67	10·07	11·21	13·22	7·07	5·30	4·88	8·65	2,740	256·93	–	38	–	35·65	35·65
Muttra	10 months, January to October	581	4·84	6·50	5·76	7·51	6·36	6·08	7·48	7·52	8·00	7·25	–	–	6·71	995	171·25	–	6	–	10·33	10·33
Agra	- - - -	1,115	5·56	5·52	5·00	7·16	7·04	5·02	4·95	7·02	7·75	5·87	5·09	2·93	5·75	1,966	176·32	21	18	18·83	16·15	34·98
Morar	- - - -	1,195	5·56	5·13	4·43	5·19	5·82	6·37	6·85	7·11	7·56	6·92	6·25	4·83	6·00	2,145	179·95	–	23	–	19·30	19·30
Gwalior Citadel	- - - -	241	4·41	3·45	4·39	7·75	8·71	10·27	9·79	8·65	7·63	4·62	3·63	3·03	6·36	323	134·00	–	4	–	16·60	16·60
Jhansi	- - - -	742	7·02	7·67	7·91	8·77	10·51	10·67	10·08	10·61	10·62	9·01	6·23	5·22	8·50	1,330	179·24	–	9	–	12·13	12·13
Nowgong	- - - -	215	6·76	5·29	6·00	8·11	8·18	7·73	6·48	6·96	5·50	5·50	5·71	6·00	6·51	484	225·11	–	6	–	27·91	27·91
Saugor	- - - -	845	6·71	7·00	6·37	7·00	7·09	7·30	6·86	7·94	9·04	8·54	6·48	6·68	7·26	1,850	218·93	–	15	–	17·75	17·75
Nagode	- - - -	214	3·55	2·40	3·91	4·40	6·70	6·73	5·83	5·16	9·10	10·40	10·00	7·26	6·39	329	153·74	–	3	–	14·02	14·02
Jubbulpore	- - - -	820	5·30	4·67	5·66	7·91	10·00	8·88	9·71	10·93	10·45	10·00	9·43	7·33	8·32	1,737	211·83	–	17	–	20·73	20·73
Umballa	- - - -	1,683	4·69	5·45	5·07	4·83	5·19	5·35	5·07	6·22	8·52	6·73	3·81	2·71	5·35	2,368	140·70	1	18	·62	10·67	11·29
Dugshaie	10 months, January to October	825	3·20	4·09	4·10	3·79	4·91	7·20	8·31	8·43	8·05	6·53	–	–	6·00	516	62·55	–	14	–	16·97	16·97
Subathoo	- - - -	860	3·50	2·29	9·32	8·94	7·45	4·74	6·51	8·96	8·40	5·13	2·86	4·73	6·11	729	84·77	–	21	–	24·42	24·42
Kussowlie	6 months, April to September	242	–	–	–	8·20	9·50	10·33	10·79	7·91	7·50	–	–	–	9·09	290	120·40	–	3	–	24·79	24·79
Jullundur	Av. Strength for 11 months, 787	751	5·16	5·26	6·05	4·81	5·68	5·17	4·80	5·07	5·84	4·57	3·00	3·40	5·00	1,081	137·36	–	6	–	7·62	7·62
Ferozepore	Av. Strength for 10 months, 838	759	4·86	4·38	4·80	6·06	4·90	5·16	4·80	5·16	5·04	4·20	4·64	2·00	4·89	829	98·92	–	12	–	14·32	14·32
Meean Meer	Av. Strength for 11 months, 1363	1,303	5·59	5·21	5·33	6·18	7·23	5·60	4·58	7·29	9·53	7·53	5·26	4·49	6·34	1,838	134·85	–	14	–	10·27	10·27
Umritsur and Govindghur	- - - -	409	4·31	4·17	3·62	7·73	9·35	8·77	7·51	12·04	12·28	8·41	4·80	3·66	7·58	765	187·04	–	30	–	73·35	73·35
Mooltan	- - - -	1,042	7·13	5·31	4·85	5·01	4·97	6·09	7·72	10·19	10·38	6·27	4·18	3·21	6·29	2,715	260·55	–	17	–	16·31	16·31
Sealkote	Av. Strength for 10 months, 1318	1,225	6·87	8·21	8·23	7·57	8·57	8·72	9·37	9·14	9·88	9·62	11·30	5·27	8·59	2,212	167·83	–	15	–	11·38	11·38
Rawul Pindee	Av. Strength for 8 months, 1652	1,252	8·11	5·81	5·56	5·95	8·85	9·00	10·21	9·66	–	–	–	–	7·78	3,121	188·92	–	9	–	–	5·45
Campbellpore	6 months, April to September	347	–	–	–	2·30	2·29	4·31	2·88	4·34	3·48	–	–	–	3·26	172	49·57	–	1	–	–	–
Nowshera	6 months, January to Sept.	659	3·78	3·21	3·55	4·71	5·38	4·69	3·96	6·00	9·56	–	–	–	4·84	831	126·10	–	6	–	9·10	9·10
Peshawur	- - - -	1,720	5·02	5·26	5·42	6·19	7·06	7·91	8·53	6·86	11·36	13·75	16·89	10·12	8·55	7,377	428·90	–	29	–	16·86	16·86

*Troops were withdrawn from many of the Stations of the Punjab towards the close of the year, and were incorporated into the Eusufzaie Field Force.

EUROPEAN TROOPS, 1863—*continued.*

TABLE showing the Ratio in which the PRINCIPAL DISEASES have contributed to make up the ADMISSION RATE of the Year in the CHIEF MILITARY STATIONS of the BENGAL PRESIDENCY.

STATIONS.	Average Strength.	ADMITTED INTO HOSPITAL PER CENT. OF AVERAGE STRENGTH.											Admitted per Cent of Average Strength from all Causes.
		Cholera.	Heat Apoplexy.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Diseases of the Respiratory Organs.	All other Causes.	
Fort William	745	·67	·13	35·57	14·09	12·08	6·98	2·55	7 52	28 19	15·03	50·33	173·14
Dum-Dum (9 months)	648	·15	·15	56 64	6·79	6·48	3·24	2·93	7·71	8·96	3·24	19·01	116 02
Barrackpore	439	·46	·23	60·82	5·69	18 68	3·42	2·73	4·33	19·36	0 38	40 92	169·20
Berhampore	223	·45	–	99·10	7·17	8·07	13·00	11 21	6·28	8·52	6·28	41·25	201·33
Darjeeling	246	–	–	38·62	1·22	4·88	4·88	6·91	6·50	6 91	2·03	28·05	100·00
Hazareebaugh	730	·41	·14	67·95	4·52	9·04	3·29	3·56	11·37	30·96	7·26	33·56	172 06
Dinapore	925	·43	·11	22·16	4·00	10·70	4·87	7·57	8·97	50·27	8·32	42·92	160·32
Benares and Raj Ghat	1,210	3·64	·25	84·71	6·94	14·96	3·97	5·21	8·26	22·97	5·54	46·53	202·98
Azimghur and Jounpore (6 months)	336	–	–	22·32	·89	2·38	2·08	2·09	0·25	10 72	3·57	12·20	62·50
Gondah	815	–	·25	28·71	1·72	6 87	2·94	2·21	9·57	37·67	5·52	27·12	122·58
Fyzabad	1,073	–	–	94·59	1·06	5·59	9·23	4·01	11·55	26·93	9 23	35·32	198·41
Rae Bareilly (10 months)	402	–	–	19·40	·25	·49	8·21	2·99	4·48	14·92	1·00	16·91	68·65
Lucknow	2,420	1·90	·17	26·28	6·69	12·19	6·65	6·45	7·93	30·13	7·93	41·12	147·42
Seetapore	592	–	–	27·36	4·22	5·74	6·76	3 38	5·91	29·56	6·25	33·01	127·19
Allahabad	1,054	5·12	·38	43·55	7·40	10·73	4·36	3 98	4·74	42·69	4·74	30·55	167 24
Cawnpore	1,162	1·46	–	29·69	2·23	10·93	4·22	4 56	4·56	36·23	5·77	38·13	137·78
Futtehgurh	567	–	–	45·15	1·41	3·35	2·47	4·93	13·05	17·81	4·07	35·80	128·04
Shahjehanpore	539	–	·37	23·93	1·11	2·04	1·30	2·60	10·02	35·81	5·75	20·22	103·15
Bareilly	916	–	·22	14·63	4·91	3·17	4·47	7·64	5·24	32·75	5·89	40·18	119·10
Roorkee	587	–	–	29·30	4·94	11·58	2·89	6·30	6·13	19·25	6·64	40·20	127·23
Moradabad	393	–	·25	42·75	1·28	5·85	4·84	8·14	12·21	33·84	7·38	36·13	152·67
Meerut	2,024	–	·05	35·37	5·93	7·75	7 07	3·66	13·49	38·54	7·31	35·08	154·25
Delhi	1,066	–	·75	117·54	4·07	15·48	5·53	7·97	8·54	29·45	10·51	56·19	256·93
Muttra (10 months)	581	·35	·51	61·10	3·44	7·23	5·69	6·54	6·54	18·93	9·98	50·94	171·25
Agra	1,115	2·87	·09	66·99	5·83	26·10	5·65	4 12	7·90	19·10	8·34	29·33	176·32
Morar	1,192	–	·17	61·75	5·71	6·37	8·14	4 53	16·44	25·17	14·34	37·33	179·95
Gwalior Citadel	241	–	–	29·05	5·81	6·22	5 39	7·05	10·37	34·02	2·90	33·19	134·00
Jhansi	742	–	–	54·85	7·41	9·84	5·25	3·37	14·29	47·93	3·50	32·75	179·24
Nowgong	215	–	·93	92·56	·93	6·98	4 66	3·72	15·35	23·25	10·68	66·05	225·11
Saugor	845	–	·12	77·99	3·90	8·64	3·78	5·21	12·19	47·34	10·41	49 35	218·93
Nagode	214	–	–	82·25	1·40	7·01	1·87	1·87	4·20	25·23	5·61	24 30	153·74
Jubbulpore	820	·12	·49	110·24	10·24	2·20	3·66	1·00	4·51	47·08	4·27	27·93	211·83
Umballa	1,683	·06	–	56·09	3·09	8·85	3·45	4·63	7·07	22·52	6·00	28·04	140·70
Dugshaie (10 months)	825	–	–	16·61	2·55	3·39	1·09	·73	4·73	12·00	3·15	18·30	62·55
Subathoo	860	–	–	16·05	2 33	6·74	1·28	7·33	6·86	20·32	4·30	19·53	84·77
Jullundur (11 months)	787	–	–	32·40	3·31	12·83	4·96	2·54	10·67	29·99	9·91	30·75	137·36
Ferozepore (10 months)	838	–	·24	25·89	·84	7·99	7·40	2·27	5·01	14·44	5·25	29·59	98·92
Meean Meer (11 months)	1,363	–	–	41·16	1·17	8·07	5·50	5·21	9·69	22·67	6·46	34·92	134·85
Umritsur and Govindghur	409	–	·73	59·17	22·00	14·91	13·94	8·07	8·07	17·12	9·78	33·25	187·04
Mooltan	1,042	–	2·69	153·36	4·51	4·99	5·66	3·84	7·58	22 07	7·39	48·46	260·55
Sealkote (10 months)	1,318	–	·15	67·53	1·37	5·16	9 94	4·70	7·36	18·67	5·84	47·11	167·83
Rawul Pindee (8 months)	1,652	–	–	104·12	2·00	4·35	7·45	6·72	8·47	19·73	3 94	32·14	188·92
Nowshera (9 months)	659	–	·15	67·07	·76	2·88	1·52	3·96	1·06	17·90	3·03	27·77	126·10
Peshawur	1,720	–	·17	337·79	2·07	8·31	3·90	3·49	5·64	20·41	6·51	39·71	428·90

EUROPEAN TROOPS, 1863—*continued.*

TABLE showing the PREVALENCE of SMALL-POX in each Month, and the Distribution of the DISEASE by STATIONS & PROVINCES.

STATIONS.	Average Strength for the Period of Occupation.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Presidency Hospitals and Chinsurah Depôt	402	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fort William	745	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dum-Dum (9 months)	648	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Barrackpore	439	–	–	–	–	1	–	–	–	–	–	–	–	1	–	1	–
Berhampore	223	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1,863	–	–	–	–	1	–	–	–	–	–	–	–	1	·05	1	·53
Darjeeling Depôt (8 months)	155	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Darjeeling	246	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hazareebaugh	730	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dinapore	925	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Benares and Raj Ghat	1,210	–	–	–	1	–	1	–	–	–	–	–	–	2	–	1	–
Azimghur and Jounpore	336	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Gondah	815	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fyzabad	1,073	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rae Bareilly (10 months)	402	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lucknow	2,420	–	–	–	1	–	–	–	–	–	–	–	–	1	–	1	–
Seetapore	592	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	8,647	–	–	–	2	–	1	–	–	–	–	–	–	3	·03	2	·23
Allahabad	1,054	–	–	1	7	4	3	–	–	–	–	–	–	15	–	4	–
„ General Hospital	–	–	–	–	–	3	–	–	–	–	–	–	–	3	–	–	–
Cawnpore	1,162	–	–	–	9	5	3	–	–	–	–	–	–	17	–	2	–
Futtehgurh	567	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Shahjehanpore	539	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bareilly	916	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nynee Tal (8 months)	283	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Landour (7 months)	216	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Roorkee	587	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moradabad	393	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meerut	2,024	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Delhi	1,066	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–
Muttra (10 months)	581	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	9,209	–	–	1	17	12	6	–	–	–	–	–	–	36	·39	6	·65
Agra	1,115	–	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Morar	1,192	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Gwalior Citadel	241	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Seepree (8 months)	164	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhansi	742	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowgong	215	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Saugor	845	–	–	–	1	–	–	1	–	–	–	–	–	2	–	1	–
Nagode	214	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jubbulpore	820	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5,493	–	1	–	1	–	–	1	–	–	–	–	–	3	·05	1	·18
Umballa	1,683	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dugshaie (10 months)	825	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subathoo	860	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie (6 months)	242	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie Depôt (8 months)	402	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phillour	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur (11 months)	787	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ferozepore (11 months)	838	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meean Meer (10 months)	1,363	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lahore Citadel	153	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Govindghur and Umritsur	409	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mooltan	1,042	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera Ismael Khan	96	–	–	–	–	2	–	–	–	–	–	–	–	2	–	–	–
Sealkote (10 months)	1,318	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kangra	93	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dhurmsalla	13	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhelum	74	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawul Pindee (8 months)	1,652	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Campbellpore (6 months)	347	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Road-making Detachment	200	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Attock	148	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowshera (9 months)	659	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peshawur	1,720	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Murree (7 months)	363	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cheerat Depôt (5 months)	409	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Eusufzaie Field Force	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Troops and Invalids on the march	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	15,660	–	–	–	–	2	–	–	–	–	–	–	–	2	·01	–	–
BENGAL PRESIDENCY	41,351	–	1	1	20	15	7	1	–	–	–	–	–	45	·11	10	·24

EUROPEAN TROOPS, 1863—*continued.*

TABLE showing the PREVALENCE of CHOLERA in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the Period of Occupation	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Presidency Hospitals and Chinsurah Depôt	402	–	–	–	1	–	–	–	–	–	–	2	1	4	–	4	–
Fort William	745	–	–	–	–	–	–	1	–	1	2	1	–	5	–	4	–
Dum-Dum (9 months)	648	–	–	–	1	–	–	–	–	–	–	–	–	1	–	1	–
Barrackpore	439	–	–	1	1	–	–	–	–	–	–	–	–	2	–	1	–
Berhampore	228	–	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
	1,893	–	1	1	2	–	–	1	–	1	2	1	–	9	·48	6	3·17
Darjeeling Depôt (8 months)	155	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Darjeeling	246	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hazareebaugh	730	–	–	–	–	–	–	2	1	–	–	–	–	3	–	3	–
Dinapore	925	–	–	1	1	–	1	1	–	–	–	–	–	4	–	3	–
Benares and Raj Ghat	1,210	1	–	1	12	–	–	26	2	2	–	–	–	44	–	35	–
Azimghur and Jounpore	336	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Gondah	815	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fyzabad	1,073	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rae Bareilly (10 months)	402	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lucknow	2,420	–	–	–	–	–	–	23	15	1	7	–	–	46	–	25	–
Seetapore	592	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	8,647	1	–	2	13	–	1	52	18	3	7	–	–	97	1·12	66	7·63
Allahabad	1,054	–	–	–	1	3	–	26	24	–	–	–	–	54	–	44	–
„ General Hospital	–	3	–	–	–	–	–	1	3	–	–	–	–	7	–	2	–
Cawnpore	1,162	–	–	–	–	–	–	–	10	6	1	–	–	17	–	24*	–
Futtehgurh	567	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Shahjehanpore	539	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bareilly	916	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nynee Tal (8 months)	283	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Landour (7 months)	216	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Roorkee	587	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moradabad	393	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meerut	2,024	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Delhi	1,066	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Muttra (10 months)	581	–	–	–	–	–	–	–	2	–	–	–	–	2	–	–	–
	9,209	3	–	–	1	3	–	27	39	6	1	–	–	80	·87	70	7·61
Agra	1,115	–	–	–	–	–	–	21	11	–	–	–	–	32	–	21	–
Morar	1,192	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Gwalior Citadel	241	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Seepree (8 months)	164	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhansi	742	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowgong	215	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Saugor	845	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nagode	214	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jubbulpore	820	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–
	5,493	–	–	–	–	–	1	21	11	–	–	–	–	33	·60	21	3·82
Umballa	1,683	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	–
Dugshaie (10 months)	825	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subathoo	860	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie (6 months)	242	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie Depôt	402	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phillour	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur (11 months)	787	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ferozepore (11 months)	838	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meean Meer (10 months)	1,363	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lahore Citadel	153	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Umritsur & Govindghur	409	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mooltan	1,042	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera Ismael Khan	96	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sealkote (10 months)	1,318	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kangra	93	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dhurmsalla	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhelum	74	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawul Pindee (8 months)	1,652	–	–	–	–	–	–	–	–	–	1	–	–	1	–	1	–
Campbellpore (6 months)	347	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Road-making Detachment	200	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Attock	148	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowshera (9 months)	659	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peshawur	1,720	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Murree (7 months)	363	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cheerat Depôt (5 months)	409	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Eusufzaie Field Force	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Troops and Invalids on the march	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–
	15,660	–	–	–	–	–	–	–	1	–	1	–	–	2	·01	2	·13
BENGAL PRESIDENCY	41,351	4	1	3	17	3	2	101	69	10	11	3	1	225	·55	169	4·09

* Deaths from Choleraic Diarrhœa have been included in the Mortality from Cholera.

EUROPEAN TROOPS, 1863—*continued.*

TABLE showing the MORTALITY in each STATION, the CAUSES OF DEATH, and the Ratio of DEATHS to STRENGTH.

STATIONS.	Average Strength for the Period of Occupation.	CAUSES OF DEATHS IN HOSPITAL.																	Number of Deaths.	DIED per 1,000 OF AVERAGE STRENGTH.		
		Cholera.	Small-pox.	Intermittent Fevers.	Remittent Fevers.	Continued Fevers.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Phthisis Pulmonalis.	Heat Apoplexy.	Delirium Tremens.	Respiratory Diseases.	Heart Diseases.	All other Diseases.	Wounds and Accidents.		A. Cholera.	B. Other Causes.	C. All Causes.
Presidency Hospitals and Chinsurah Depôt	402	4	–	–	–	1	2	–	1	1	2	10	–	–	1	–	3	–	25	–	–	–
Hospital Ship "Bentinck"	47	–	–	–	–	–	–	4	–	–	1	1	–	–	–	–	3	–	9	–	–	–
Fort William	745	4	–	1	1	3	4	–	1	1	–	–	–	–	1	–	1	–	17	5·37	17·45	22·82
Dum-Dum (9 months)	684	1	–	–	–	–	2	–	–	–	–	–	1	1	–	–	3	–	8	1·54	10·81	12·35
Barrackpore	439	1	1	–	–	1	1	–	–	–	–	1	1	1	–	–	1	–	9	2·28	18·22	20·50
Berhampore	223	–	–	–	–	–	1	1	–	1	–	–	–	2	–	–	–	–	5	–	22·42	22·42
	1,893	6	1	1	1	4	8	1	1	2	–	1	2	4	1	1	4	1	39	3·17	17·43	20·60
Darjeeling Depôt (8 months)	155	–	–	–	–	–	–	–	–	–	2	1	–	–	–	1	1	–	5	–	–	–
Darjeeling	246	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	1	3	–	12·19	12·19
Hazareebaugh	730	3	–	1	–	4	3	–	–	2	–	–	1	–	–	–	2	–	16	4·11	17·81	21·92
Dinapore	925	3	–	–	–	–	2	1	–	4	–	–	–	–	1	–	–	–	11	3·24	8·65	11·89
Benares and Raj Ghat	1,210	35	1	–	–	2	–	–	1	2	2	4	–	–	–	–	4	–	51	28·93	13·22	42·15
Azimghur and Jounpore	181	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	2·98	2·98
Gondah	815	–	–	–	2	–	–	–	–	3	–	1	2	1	–	–	1	–	10	–	12·27	12·27
Fyzabad	1,073	–	–	–	–	2	–	–	2	4	4	–	1	1	–	1	–	15	–	13·98	13·98
Rae Bareilly (10 months)	402	–	–	1	–	–	–	–	–	1	1	–	–	–	–	–	–	3	–	7·46	7·46
Lucknow	2,420	25	1	–	–	4	–	1	14	3	4	2	–	8	1	5	1	69	10·33	18·18	28·51
Seetapore	592	–	–	–	1	–	–	–	–	–	1	–	–	–	–	2	–	4	–	6·76	6·76
	8,647	66	2	1	5	6	12	1	2	27	13	16	5	2	10	2	16	2	188	7·63	14·14	21·74
Allahabad	1,054	44	4	3	4	–	4	–	2	8	1	6	1	2	2	1	1	–	83	41·75	37·00	78·75
„ General Hospital	64	2	–	–	–	–	–	–	1	1	2	4	1	–	–	–	5	–	16	–	–	–
Cawnpore	1,162	24	2	1	1	2	–	–	–	5	1	3	–	2	2	–	3	–	46	20·65	18·94	39·59
Futtehgurh	567	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	4	–	5	–	8·82	8·82
Shahjehanpore	539	–	–	–	2	–	1	–	–	–	–	1	2	–	–	–	1	–	7	–	13·00	13·00
Bareilly	916	–	–	1	–	–	2	1	–	–	1	1	1	–	–	–	4	1	12	–	13·10	13·10
Nynee Tal (8 months)	283	–	–	–	–	–	–	–	5	–	3	1	–	–	–	–	1	–	10	–	–	–
Landour (7 months)	216	–	–	–	–	–	–	2	–	–	3	–	–	–	–	–	–	–	5	–	–	–
Roorkee	587	–	–	1	–	–	2	–	–	1	–	2	–	–	–	–	1	–	7	–	11·92	11·92
Moradabad	393	–	–	–	–	–	–	–	1	–	1	1	–	–	–	–	–	–	3	–	7·63	7·63
Meerut	2,024	–	–	–	1	–	3	7	–	3	5	2	1	–	1	2	2	–	27	–	13·34	13·34
Delhi	1,066	–	–	–	4	3	3	–	3	4	1	4	6	–	2	–	7	1	38	–	35·65	35·65
Muttra (10 months)	581	–	–	–	–	–	1	–	–	1	–	1	–	1	–	–	2	–	6	–	10·33	10·33
	9,209	70	6	6	12	6	16	10	12	23	18	26	12	5	7	3	31	2	265	7·61	21·17	28·78
Agra	1,115	21	–	1	2	4	2	–	–	–	1	1	1	2	2	–	2	–	39	18·83	16·15	34·98
Morar	1,192	–	–	–	–	2	5	1	–	7	–	1	1	1	2	1	1	1	23	–	19·30	19·30
Gwalior Citadel	241	–	–	–	–	–	1	–	–	–	–	–	–	1	1	1	–	–	4	–	16·60	16·60
Seepree (8 months)	164	–	–	–	–	1	–	–	2	–	–	–	–	–	–	1	–	–	4	–	–	–
Jhansi	742	–	–	1	–	2	2	–	–	1	–	–	–	–	1	1	1	–	9	–	12·13	12·13
Nowgong	215	–	–	–	2	–	–	–	–	1	1	1	1	–	–	–	–	–	6	–	27·91	27·91
Saugor	845	–	1	–	1	1	1	–	1	3	1	–	1	–	1	1	3	–	15	–	17·75	17·75
Nagode	214	–	–	–	–	1	1	–	–	–	–	–	–	–	–	1	–	–	3	–	14·02	14·02
Jubbulpore	820	–	–	1	1	–	4	–	–	5	–	2	2	–	1	–	1	–	17	–	20·73	20·73
	5,493	21	1	3	6	11	16	1	3	17	3	5	6	4	8	6	8	1	120	3·82	18·03	21·85
Umballa	1,683	1	–	1	–	3	1	–	–	–	3	2	–	1	1	2	4	–	19	·62	10·67	11·29
Dugshaie (10 months)	825	–	–	–	–	6	2	1	1	1	1	1	–	–	–	–	1	–	14	–	16·97	16·97
Subathoo	860	–	–	2	1	4	5	1	2	–	–	2	–	–	–	–	3	1	21	–	24·42	24·42
Kussowlie (6 months)	242	–	–	–	–	–	–	–	–	2	–	–	1	–	–	–	–	–	3	–	24·79	24·79
Kussowlie Depôt (8 mths.)	402	–	–	–	–	–	–	1	2	1	–	1	1	–	–	1	4	–	11	–	–	–
Phillour	90	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–
Jullundur (11 months)	787	–	–	–	–	2	1	–	–	–	1	1	–	–	1	–	–	–	6	–	7·62	7·62
Ferozepore (11 months)	838	–	–	–	–	–	1	–	1	1	2	3	2	–	2	–	–	1	13	–	14·32	14·32
Meean Meer (10 months)	1,363	–	–	2	–	1	2	–	2	3	2	1	–	–	–	1	–	1	15	–	10·27	10·27
Lahore Citadel	153	–	–	1	–	–	1	1	–	–	1	–	–	–	–	1	2	1	8	–	–	–
Umritsur and Govindghur	409	–	–	1	1	1	19	–	1	1	1	2	2	–	–	1	–	–	30	–	73·35	73·35
Mooltan	1,042	–	–	–	2	–	–	2	–	2	1	1	4	1	–	1	3	–	17	–	16·31	16·31
Dera Ismael Khan	96	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–	1	–	3	–	–	–
Sealkote (10 months)	1,318	–	–	–	1	1	–	–	–	5	–	7	2	1	1	–	3	–	21	–	11·38	11·38
Kangra	93	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	2	–	–	–
Dhurmsalla	30	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	2	–	–	–
Jhelum	74	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawul Pindee (8 months)	1,652	1	–	2	–	–	3	–	3	2	4	1	1	–	1	1	5	–	24	–	5·45	5·45
Campbellpore (6 months)	347	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Road-making Detachment	200	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–
Attock	148	–	–	1	–	–	1	–	–	–	–	–	–	–	–	2	–	–	4	–	–	–
Nowshera (9 months)	659	–	–	–	1	1	1	1	–	–	1	1	1	1	–	–	3	1	12	–	9·10	9·10
Peshawur	1,720	–	–	6	4	3	2	1	–	2	–	4	2	–	1	–	3	1	29	–	16·86	16·86
Murree (7 months)	363	–	–	–	–	1	–	–	–	–	2	1	–	–	1	2	–	1	8	–	–	–
Cheerat Depôt (5 months)	409	–	–	1	1	–	1	–	1	–	–	1	1	–	1	–	2	–	9	–	–	–
Eusufzaie Field Force	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–
Troops and Invalids on the march	–	–	–	–	–	–	2	–	–	1	–	1	–	1	3	1	–	–	9	–	–	–
	15,660	2	–	19	12	23	42	8	14	22	21	30	20	5	12	13	34	7	284	·13	18·01	18·14
BENGAL PRESIDENCY	41,351	169	10	30	36	51	96	25	33	92	58	89	45	25	39	20	99	13	530	4·09	18·40	22·49

EUROPEAN TROOPS, 1863—*continued.*

TABLE showing the CAUSES of DEATH and INVALIDING.

TOTAL LOSS TO THE SERVICE BY DEATH AND INVALIDING, 2,483. PER 1,000 OF AVERAGE STRENGTH, 60·05.

NUMBER OF MEN LOST TO THE SERVICE BY DEATH, 1,037.				NUMBER OF MEN LOST TO THE SERVICE BY INVALIDING, 1,446.			
CAUSES OF DEATH.	Died in Hospital.	Died out of Hospital.	Died per 1,000 of Strength.	CAUSES OF INVALIDING.	Invalided for Discharge from the Service.	Invalided for Change of Climate.	Invalided per 1,000 of Strength.
Variola	10	-	·24	Tonsillitis	-	1	-
Febris Intermittens	30	-	2·82	Febris	20	63	2·01
„ Remittens	36	-		Ophthalmia	37	38	1·81
„ Continua	51	-		Erysipelas	1	-	-
Erysipelas	3	-	-	Dysenteria	5	40	1·59
Pyœmia	2	-	-	Diarrhœa	2	19	
Dysenteria Acuta	96	-	2·94	Rheumatismus	128	98	5·47
„ Chronica	25	-		Syphilis	29	61	
Diarrhœa	33	-	·79	Iritis Syphilitica	3	-	2·42
Cholera	169	-	4·09	Bubo	1	2	
Rheumatismus	5	-	-	Strictura Urethræ	2	2	
Syphilis Secundaria	8	-	-	Purpura	-	1	-
Bubo	2	-	-	Anœmia	7	12	-
Hydrophobia	2	-	-	Anasarca	-	2	-
Purpura	1	-	-	Lupus	-	1	-
Ebriositas	3	9	-	Obesitas	1	-	-
Anœmia	4	-	-	Scrofula	3	8	-
Anasarca	4	-	-	Phthisis Pulmonalis	43	40	2·03
Carcinoma	1	-	-	Hæmoptysis	-	1	-
Scrofula	2	-	-	Abscessus Psoanus	-	1	-
Phthisis Pulmonalis	89	-	2·25	Morbus Coxæ	-	1	-
Hæmoptysis	4	-		Apoplexia	1	1	-
Meningitis	7	-	-	Paralysis	8	7	
Encephalitis	4	-	-	Mania	8	6	·72
Apoplexia	45	8	1·29	Dementia	10	6	
Hemiplegia	2	-	-	Epilepsia	30	1	·74
Paralysis	4	-	-	Cephalœa	2	6	-
Delirium Tremens	20	-	·48	Neuralgia	-	3	-
Epilepsia	2	-	-	Otitis	2	3	-
Cephalœa	1	-	-	Dysecœa	12	5	-
Pericarditis	3	-	-	Amaurosis	2	2	-
Morbus Cordis	16	4	·79	Nyctalopia	1	-	-
Aneurisma	7	6		Pericarditis	-	1	
Laryngitis	2	-	·89	Endocarditis	27	28	
Bronchitis	10	-		Aneurisma	3	2	1·67
Pleuritis	2	-		Angina pectoris	1	1	
Pneumonia	20	-		Palpitatio	3	3	
Asthma	3	-		Varix	8	1	-
Gastritis	2	-	-	Laryngitis	1	2	
Enteritis	4	-	-	Bronchitis	14	28	
Peritonitis	2	-	-	Pleuritis	-	1	1·22
Hæmatemosis	1	-	-	Pneumonia	1	1	
Splenitis	2	-	-	Asthma	1	1	
Hepatitis Acuta	92	-	3·64	Gastritis	-	3	-
„ Chronica	58	-		Hernia	13	1	-
Icterus	3	-	-	Dyspepsia	-	7	-
Ascites	5	-	-	Colica	1	-	-
Nephria	5	-	-	Hæmatemesis	1	-	-
Calculus Vesicœ	1	-	-	Splenitis	-	15	-
Uræmia	1	-	-	Hepatitis	45	169	5·18
Hæmaturia	1	-	-	Cirrhosis	1	-	-
Synovitis	1	-	-	Ascites	1	1	-
Morbus Coxæ	1	-	-	Nephritis	1	2	-
Abscessus	2	-	-	Ischuria	-	1	-
Asthenia	8	-	-	Diabetes	-	1	-
Accident	3	7		Cystitis	-	1	-
Drowned	-	15		Varicocele	-	1	-
Suffocated while drunk	-	4		Orchitis	5	7	-
Fracture	2	-	2·23	Hydrocele	-	1	-
Concussion of brain	4	-		Arthritis	1	-	-
Gunshot wounds	2	-		Synovitis	1	2	-
Killed in action	-	40		Ostitis	1	4	-
Poisoning	1	-		Necrosis	1	-	-
Suicide	1	13		Contractura	6	-	-
Found dead; cause of death unknown	-	1	-	Abscessus	1	3	-
				Ulcus	7	14	-
Ratio per 1,000 for Deaths from causes not specially calculated	-	-	2·63	Debilitas (worn out)	75	79	3·72
				Ambustio	1	-	
				Luxatura	4	-	
				Subluxatio	2	-	
				Fractura	5	2	·61
				Contusio	6	-	
				Vulnus Sclopetarium	3	-	
				„ Incisum	-	1	
				Amputatio	1	-	
				Causes not specified	-	-	-
				Ratio per 1,000 for Invaliding from causes not specially calculated	31	-	-
	930	107	25·08		600	815	34·97

1864.

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1.—EUROPEAN TROOPS, 1864.

TABLE showing the Sickness and Mortality among the European Troops serving in the Bengal Presidency, during the Year 1864, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
January	39,587	1,975	4·99	34		1	–	2	–	1	–	1	1	1	1	1	5	–	3	5	3	–	–	3	–	2	6
February	40,208	2,265	5·63	35		1	–	2	1	1	1	–	–	2	5	3	–	–	2	3	4	–	–	1	3	3	3
March	39,982	2,417	6·05	49		9	–	–	2	1	2	1	2	–	5	2	6	–	5	2	3	–	–	1	–	5	3
April	40,859	2,566	6·28	48		13	2	3	1	2	1	1	1	–	1	2	7	–	2	1	4	–	–	–	–	4	3
May	40,857	2,760	6·76	50		5	2	1	1	2	–	–	5	2	–	4	6	–	3	3	5	–	–	2	1	5	3
June	40,674	2,802	6·89	100		3	2	5	7	8	23	4	5	2	1	4	2	–	3	2	6	–	–	–	2	14	7
July	40,684	2,821	6·93	84		6	2	3	1	6	23	2	4	1	1	2	7	–	1	2	5	1	1	–	1	11	4
August	40,521	2,712	6·69	80		5	–	4	8	1	3	3	8	1	3	4	9	–	4	–	11	–	1	1	1	9	4
September	40,163	2,883	7·18	125		51	–	5	10	5	2	2	5	1	3	2	6	1	6	3	4	–	–	–	1	8	10
October	39,954	2,586	6·47	72		5	–	6	3	2	–	2	1	–	5	7	7	–	4	3	7	–	–	1	1	16	2
November	40,687	2,320	5·70	80		3	1	7	6	4	1	–	9	1	3	10	6	1	3	4	6	–	–	2	2	7	4
December	40,442	1,971	4·87	95		2	5	3	12	2	3	–	8	2	2	6	6	–	5	7	7	1	–	3	4	9	8
						103	14	41	52	34	59	16	55	11	27	49	70	2	41	35	65	2	2	14	16	87	57
						Died per 1,000 of Average Strength.																					
For the year	40,385	2,507	6·21	852	21·10	2·55	·35	1·01	1·29	·84	1·46	·40	1·36	·27	·67	1·21	1·74	·05	1·01	·87	1·61	·05	·05	·35	·40	2·15	1·41

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	5	15	22	5	4	10	6	68	5	6	2	148	·37	69·59
Small-pox	3	4	6	5	16	10	2	–	1	–	14	26	87	·22	16·09
Fever, Intermittent	920	723	924	1,003	1,691	1,799	1,693	1,802	1,625	1,915	2,504	952	17,551	43·46	
,, Remittent	15	15	39	71	111	230	223	209	355	198	117	84	1,667	4·13	·58
,, Continued	55	64	130	213	421	582	381	281	150	116	174	114	2,681	6·64	
Apoplexy	–	2	6	3	5	29	27	7	4	–	4	3	90	·22	67·78
Delirium Tremens	8	11	15	12	22	20	4	6	12	12	16	7	145	·36	11·04
Dysentery	77	71	67	77	132	98	105	176	179	143	186	129	1,440	3·57	4·58
Diarrhœa	144	134	257	309	320	314	304	724	575	306	361	218	3,966	9·82	·68
Hepatitis	131	160	197	193	255	205	212	253	208	151	181	127	2,273	5·63	5·24
Spleen Disease	21	20	41	44	40	39	31	45	47	26	34	21	409	1·01	·50
Respiratory Diseases	244	252	337	268	327	246	175	362	228	230	288	259	3,216	7·96	1·28
Phthisis Pulmonalis	17	12	20	19	36	24	35	35	31	36	28	25	318	·79	20·44
Scurvy	1	1	5	3	4	7	1	3	5	1	1	3	35	·09	5·72
Rheumatism	248	234	342	273	371	256	255	388	250	251	273	254	3,395	8·41	
Venereal Diseases	928	1,012	1,173	1,036	1,071	775	617	774	664	620	847	778	10,295	25·49	
Eye Diseases	119	129	191	192	178	147	104	154	167	131	140	82	1,734	4·29	
Abscess and Ulcer	340	382	517	443	546	476	554	489	407	311	481	320	5,266	13·04	·48
Wounds and Accidents	314	313	482	418	405	333	228	329	319	346	416	343	4,246	10·51	
All other Causes	376	467	653	625	780	679	671	860	652	543	570	455	7,331	18·15	
	3,961	4,011	5,417	5,229	6,736	6,273	5,632	6,903	5,947	5,341	6,641	4,202	66,293		
	Admitted per Cent. of Average Strength in each Month.														
	10·01	9·98	13·55	12·80	16·49	15·42	13·84	17·03	14·81	13·37	16·32	10·39	164·16		

1.—EUROPEAN TROOPS, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in BENGAL PROPER, during the Year 1864, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
January	1,996	90	4·51	1				1																			
February	1,698	117	6·89	2						1											1						
March	1,903	126	6·62	4		1			1						1		1										
April	2,156	117	5·43	4		2					1																1
May	2,044	115	5·63	2		1															1						
June	2,040	128	6·27	6					1				2								1						2
July	2,021	164	8·11	4						1			1			1						1					2
August	2,026	152	7·50	3					1			1	1														
September	2,035	137	6·73	5					1								1										3
October	1,818	134	7·37	9		1				2			1								1					2	2
November	1,655	93	5·62	8						1			2			2								2			1
December	2,628	128	4·87	2																				1		1	
						5	–	1	4	5	1	1	7	–	1	3	2	–	–	–	4	1	–	3	–	3	9
					Died per 1,000 of Average Strength.																						
For the year	2,002	124	6·19	50	24·98	2·50	–	·50	2·00	2·50	·50	·50	3·49	–	·50	1·50	1·00	–	–	–	2·00	·50	–	1·50	–	1·50	4·49

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	3	1	4	1	–	–	–	–	1	–	2	12	·60	41·67
Small-pox	–	–	2	–	–	–	–	–	–	–	–	1	3	·15	—
Fever, Intermitten	26	17	22	23	38	50	104	80	39	32	12	43	486	24·27	
„ Remittent	2	–	3	8	6	39	34	36	57	21	13	18	237	11·84	1·18
„ Continued	7	4	8	8	7	12	18	18	17	7	11	6	123	6·14	
Apoplexy	–	–	–	1	–	1	–	–	–	–	1	–	79	·15	33·33
Delirium Tremens	–	–	–	1	3	–	–	1	1	–	–	1	3	·35	14·29
Dysentery	–	6	6	5	11	12	3	10	5	4	4	13	7	3·95	8·86
Diarrhœa	16	16	40	16	17	17	21	29	15	15	31	47	280	13·99	·36
Hepatitis	7	2	7	7	14	4	8	8	6	3	4	6	76	3·80	6·58
Spleen Disease	1	2	2	3	2	2	–	2	2	2	–	1	19	·95	—
Respiratory Diseases	4	9	10	15	21	11	5	11	12	7	10	13	128	6·39	—
Phthisis Pulmonalis	–	2	–	–	1	–	1	–	4	–	–	3	11	·55	36·36
Scurvy	–	–	–	–	–	–	–	–	–	–	–	–	—	—	—
Rheumatism	8	19	12	9	19	13	9	16	8	14	9	18	154	7·69	
Venereal Diseases	51	50	54	41	45	52	47	37	41	25	28	76	547	27·32	
Eye Diseases	8	5	9	7	9	12	8	6	3	4	3	9	83	4·15	
Abscess and Ulcer	17	10	15	14	14	11	19	17	12	16	26	24	195	9·74	·45
Wounds and Accidents	12	11	23	17	10	12	8	19	12	18	15	20	177	8·84	
All other Causes	17	20	39	38	40	35	37	37	41	34	34	33	405	20·23	
	176	176	253	217	258	283	322	327	275	203	201	334	3,025		
	Admitted per Cent. of Average Strength in each Month.														
	8·82	10·37	13·29	10·07	12·62	13·87	15·93	16·14	13·51	11·17	12·14	12·71	151·10		

Ten men belonging to Regiments stationed in Lower Bengal died on board the "Bentinck," and in the Kidderpore Hospital. If these deaths be included, the death-rate of the year will be 29·98 per 1,000.

I.—EUROPEAN TROOPS, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Dinapore, Benares, Oude,* and *Cawnpore Districts,* during the Year 1864, and the Prevalence of the Principal Diseases in each month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
January	9,993	475	4·75	8		1	–	1	1	–	1	–	1	–	–	1	1	–	1	2	1	–	–	–	–	1	2
February	10,499	573	5·46	8		–	–	1	1	–	–	–	1	–	–	3	1	–	1	1	1	–	–	–	–	2	–
March	10,212	640	6·27	12		2	–	–	1	–	1	–	1	–	–	1	–	–	2	–	1	–	–	–	–	1	1
April	10,741	722	6·72	11		2	1	1	–	1	–	–	1	–	1	–	1	–	2	1	–	–	–	–	–	–	–
May	10,887	722	6·63	16		2	1	–	2	1	–	–	2	–	–	1	1	–	1	2	1	–	–	–	–	4	1
June	10,823	709	6·55	30		2	2	1	2	1	13	1	–	1	–	1	–	–	1	2	2	–	–	–	–	2	2
July	10,929	694	6·35	27		6	1	–	–	2	8	–	1	–	–	–	2	–	–	–	3	–	–	–	–	2	1
August	10,882	687	6·31	29		5	–	1	6	–	2	1	–	–	1	2	–	–	1	1	5	1	–	1	–	2	2
September	10,783	765	7·09	80		49	–	–	7	2	1	1	2	–	3	2	2	–	3	–	3	–	–	–	–	3	2
October	10,735	649	6·05	19		1	–	–	2	2	1	2	3	–	2	5	1	–	–	–	1	–	–	–	–	2	–
November	8,877	420	4·73	19		1	–	–	4	3	–	–	3	–	2	2	–	–	–	–	1	–	–	–	2	1	–
December	8,604	389	4·52	15		–	–	–	4	–	–	–	3	–	–	–	1	–	3	1	–	–	–	–	–	1	1
						70	5	4	27	10	25	6	16	1	9	16	9	–	13	8	18	–	–	1	3	21	12
						Died per 1,000 of Average Strength.																					
For the year	10,333	619	5·99	274	26·52	6·67	·49	·39	2·61	·96	2·42	·58	1·55	·10	·87	1·55	·87	–	1·26	·78	1·74	–	–	·10	·29	2·03	1·16

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	2	2	2	2	9	6	66	2	–	–	91	·88	76·92
Small-pox	–	–	1	1	6	6	1	–	–	–	–	–	15	·15	33·33
Fever, Intermittent	105	94	144	157	187	242	221	308	296	172	153	70	2,149	20·79	1·27
„ Remittent	3	8	15	23	31	88	108	115	138	67	47	17	660	6·39	
„ Continued	6	10	19	48	82	97	46	38	23	14	18	26	427	4·13	
Apoplexy	–	–	2	1	2	16	6	2	1	–	–	–	30	·29	83·33
Delirium Tremens	4	3	5	3	4	2	–	1	4	5	6	3	40	·39	15·00
Dysentery	15	17	24	20	31	24	26	60	75	47	39	40	418	4·05	4·07
Diarrhœa	34	38	71	127	93	93	92	248	264	77	79	52	1,268	12·27	·71
Hepatitis	19	29	33	38	51	47	37	68	53	52	42	21	490	4·74	5·10
Spleen Disease	4	2	6	5	5	4	2	10	4	6	4	1	53	·51	—
Respiratory Diseases	65	51	78	71	85	49	51	91	60	50	51	69	771	7·46	1·69
Phthisis Pulmonalis	4	1	7	2	17	12	19	15	9	16	3	1	106	1·03	17·00
Scurvy	1	–	1	1	–	1	–	–	–	–	1	–	5	·05	—
Rheumatism	51	43	85	73	94	73	72	117	75	78	65	42	868	8·40	·40
Venereal Diseases	275	242	359	249	321	196	140	225	161	186	196	188	2,738	26·50	
Eye Diseases	32	24	56	44	44	26	31	53	50	33	22	22	437	4·23	
Abscess and Ulcer	91	80	127	115	145	164	150	120	126	68	110	58	1,354	13·10	
Wounds and Accidents	60	68	132	101	115	83	45	68	76	70	81	61	960	9 29	
All other Causes	79	89	162	156	209	185	190	239	163	140	94	85	1,791	17·33	
	848	799	1,329	1,237	1,524	1,410	1,246	1,784	1,644	1,083	1,011	756	14,671		
	Admitted per Cent. of Average Strength in each Month.														
	8·49	7·61	13·01	11·52	14·00	13·03	11·40	16·39	15·25	10·09	11·39	8·78	141·98		

I.—EUROPEAN TROOPS, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Meerut* and *Rohilcund* Districts, during the Year 1864, and the Prevalence of the Principal Diseases in each Month in the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Cases.	Died out of Hospital.
January	4,913	266	5·41	5	—	—	—	—	—	—	—	—	—	—	1	—	2	—	—	2	—	—	—	—	—	—	1
February	5,633	343	6·09	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1
March	5,853	405	6·92	7	—	—	—	—	—	—	—	—	—	—	1	—	3	—	1	—	—	1	—	—	—	—	1
April	6,194	463	7·47	8	—	—	—	—	—	—	—	—	—	—	—	1	3	—	—	—	—	2	—	—	—	2	—
May	6,283	549	8·74	5	—	—	—	—	—	1	—	—	1	1	—	—	—	—	—	—	—	1	—	—	—	1	—
June	6,256	521	8·33	16	—	1	—	—	2	1	3	—	1	—	—	1	1	—	—	—	—	1	—	—	1	3	1
July	6,238	488	7·82	16	—	—	—	—	—	1	4	—	—	—	1	—	3	—	1	—	—	—	—	—	—	6	—
August	6,208	480	7·73	7	—	—	—	—	—	—	—	—	1	1	1	—	1	—	1	—	—	—	—	—	1	1	—
September	6,193	515	8·31	8	—	—	—	2	1	—	—	—	—	—	—	—	2	—	1	—	—	1	—	—	—	1	—
October	6,159	453	7·35	8	—	—	—	3	—	—	—	—	1	—	—	—	2	—	1	—	—	—	—	—	—	1	—
November	5,792	401	6·92	12	—	—	1	2	1	—	—	—	1	—	—	—	3	—	2	—	—	—	—	—	—	1	1
December	5,678	287	5·06	11	—	—	2	—	1	—	1	—	1	—	—	—	2	—	—	—	—	—	—	—	—	3	1
						1	3	7	5	3	8	—	6	2	4	2	22	—	8	2	6	—	—	—	2	19	5
						Died per 1,000 of Average Strength.																					
For the Year	5,950	431	7·24	105	17·65	·16	·51	1·18	·84	·51	1·34	—	1·01	·34	·67	·34	3·69	—	1·34	·34	1·01	—	—	—	·34	3·19	·84

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	—	—	—	—	—	1	—	—	—	—	—	—	1	·02	—
Small-pox	—	—	—	—	—	—	—	—	1	—	4	15	20	·33	15·00
Fever, Intermittent	66	95	166	206	282	200	173	224	193	145	148	70	1,968	33·08	
„ Remittent	2	2	13	19	43	28	22	16	22	13	25	14	219	3·68	·56
„ Continued	17	12	26	50	78	81	58	32	27	38	63	29	511	8·58	
Apoplexy	—	—	1	1	—	3	5	1	1	—	—	1	13	·22	61·54
Delirium Tremens	—	—	—	1	1	3	—	—	1	1	—	—	7	·12	·00
Dysentery	7	8	10	17	27	18	19	21	15	15	29	15	201	3·38	3·98
Diarrhœa	10	9	12	41	58	50	37	91	58	58	44	17	485	8·15	·82
Hepatitis	25	21	34	40	42	39	44	39	40	18	34	20	396	6·66	6·06
Spleen Disease	3	3	5	5	4	5	7	6	8	—	6	5	57	·96	·00
Respiratory Diseases	21	33	39	28	43	41	29	47	41	40	40	41	443	7·44	1·81
Phthisis Pulmonalis	1	2	1	5	4	2	3	3	3	3	1	—	28	·48	21·43
Scurvy	—	—	1	—	2	—	—	1	—	—	—	1	5	·09	—
Rheumatism	27	29	44	49	76	36	38	51	31	22	31	35	469	7·88	
Venereal Diseases	156	176	204	235	187	128	108	170	144	117	164	107	1,896	31·86	
Eye Diseases	14	22	35	45	31	24	19	27	22	22	30	9	300	5·04	·40
Abscess and Ulcer	59	95	148	107	140	92	110	110	102	85	92	82	1,222	20·54	
Wounds and Accidents	40	39	68	78	53	45	35	57	34	49	56	56	610	10·25	
All other Causes	58	57	94	81	116	125	111	164	136	106	89	55	1,192	20·03	
	506	603	901	1,008	1,187	921	818	1,060	879	732	856	572	10,043		
	Admitted per Cent. of Average Strength in each Month.														
	10·30	10·70	15·39	16·27	18·89	14·72	13·11	17·07	14·19	11·83	14·78	10·08	168·79		

I.—EUROPEAN TROOPS, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Agra* District and in *Central India*, during the Year 1864, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
January	5,102	276	5·41	2		–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–
February	5,164	309	5·99	5		–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	2
March	5,075	321	6·32	4		–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	–	–	–	–	–	2	–
April	5,029	336	6·68	6		–	–	1	1	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	1	–
May	5,027	352	7·00	5		–	–	1	–	–	–	–	–	–	–	1	1	–	–	–	1	–	–	–	–	–	1
June	5,009	345	6·89	14		–	–	1	–	2	4	1	–	–	–	1	–	–	1	–	–	–	–	–	–	4	–
July	4,945	308	6·23	3		–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–
August	4,941	317	6·42	6		–	–	1	–	–	–	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–
September	4,931	343	6·95	11		1	–	1	–	1	1	1	3	–	–	–	1	–	–	–	–	–	–	–	–	2	–
October	4,702	307	6·53	9		2	–	–	–	–	–	–	1	–	1	1	–	–	–	2	–	–	–	–	–	2	–
November	4,165	289	6·94	8		–	–	1	1	–	–	–	–	–	–	1	–	–	–	2	1	–	–	–	–	2	–
December	4,154	255	6·14	11		–	–	–	2	–	–	–	2	–	2	2	–	–	1	–	–	–	–	–	1	–	1
						3	3	5	4	3	5	2	12	–	3	8	4	–	3	4	4	–	–	–	3	14	4
						Died per 1,000 of Average Strength.																					
For the Year	4,854	313	6·45	84	17·31	·62	·62	1·03	·82	·62	1·08	·41	2·48	–	·62	1·65	·82	–	·62	·82	·82	–	–	–	·62	2·88	·83

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	–	–	–	1	1	–	1	1	–	–	4	·08	75·00
Small-pox	3	4	3	4	10	4	1	–	–	–	1	1	31	·64	9·68
Fever, Intermittent	98	92	114	140	244	234	156	235	268	459	515	231	2,786	57·40	
„ Remittent	–	–	2	8	9	1	1	2	2	4	7	7	43	·89	·37
„ Continued	12	18	28	28	47	80	49	30	43	28	26	28	417	8·59	
Apoplexy	–	1	1	–	–	4	–	1	2	–	–	–	9	·18	55·56
Delirium Tremens	–	3	1	–	5	5	–	1	4	1	3	1	24	·50	8·33
Dysentery	8	8	5	7	6	11	16	33	23	12	24	12	165	3·39	7·27
Diarrhœa	11	14	15	11	18	31	41	134	96	56	52	23	502	10·34	·60
Hepatitis	14	24	21	20	25	18	19	16	20	15	9	9	210	4·32	5·71
Spleen Disease	6	9	14	8	7	7	6	9	12	3	7	6	94	1·94	·00
Respiratory Diseases	32	38	59	44	46	27	20	29	21	29	39	28	412	8·49	·72
Phthisis Pulmonalis	3	–	2	2	5	2	–	4	–	5	1	–	24	·50	16·67
Scurvy	–	–	–	–	1	2	1	–	–	–	–	2	6	·12	–
Rheumatism	45	47	66	36	47	40	45	55	45	42	41	26	535	11·02	
Venereal Diseases	114	158	177	153	170	103	96	92	96	84	100	105	1,448	29·83	
Eye Diseases	4	11	27	20	22	11	10	17	29	15	9	10	185	3·81	
Abscess and Ulcer	48	59	80	63	73	55	67	48	49	47	67	36	692	14·26	·48
Wounds and Accidents	41	47	61	48	49	43	23	38	45	40	45	36	516	10·63	
All other Causes	60	84	100	95	100	98	78	96	70	72	68	56	977	20·13	
	499	617	776	687	884	777	630	840	826	913	1,014	617	9,080		
	Admitted per Cent. of Average Strength in each Month.														
	9·78	11·95	15·29	13·66	17·58	15·51	12·74	17·00	16·75	19·42	24·35	14·85	187·06		

I.—EUROPEAN TROOPS, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the *Punjab*, during the Year 1864, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Diseases	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital
January	16,399	712	4·34	13		–	–	–	–	–	–	1	1	1	–	1	1	–	1	1	1	–	–	3	–	1	–
February	15,911	793	4·98	9		–	–	–	–	–	–	–	–	–	1	2	1	–	1	1	1	–	–	–	1	1	–
March	16,014	816	5·09	13		–	–	–	–	–	1	–	–	–	3	–	1	–	2	2	–	–	–	1	–	2	–
April	16,093	831	5·16	8		–	–	1	–	1	–	1	–	–	–	–	3	–	1	–	–	–	–	2	–	1	–
May	16,336	961	5·88	15		1	–	–	1	2	–	–	2	1	–	1	2	–	2	1	1	–	–	2	1	1	–
June	16,275	1,031	6·34	28		–	–	3	1	3	1	2	2	1	1	1	1	–	2	2	2	–	–	–	1	3	–
July	16,283	1,100	6·76	32		–	–	1	1	2	11	2	2	1	–	–	1	–	2	1	2	–	–	1	1	2	–
August	16,196	1,008	6·23	30		–	–	1	1	1	1	1	1	–	1	2	7	–	2	1	4	–	–	1	–	5	–
September	15,994	1,056	6·60	18		–	–	2	1	2	–	–	–	1	–	–	1	1	2	2	–	–	–	–	–	1	–
October	15,884	961	6·05	24		–	–	3	1	–	–	–	1	–	2	1	4	–	3	1	3	–	–	1	1	3	–
November	14,895	792	5·32	19		–	–	3	–	–	1	–	2	1	–	4	2	–	–	1	1	–	–	–	–	2	–
December	14,346	640	4·46	22		–	3	–	1	–	–	–	2	2	–	2	3	–	–	2	3	–	–	2	–	2	–
						1	3	14	7	9	15	7	13	8	8	15	26	1	15	14	17		2	9	5	21	21
						Died per 1,000 of Average Strength.																					
For the Year	15,886	891	5·61	231	14·54	0·6	·19	·88	·44	·57	·95	·44	·82	·50	·50	·94	1·64	·06	·95	·88	1·07	–	·13	·57	·31	1·32	1·32

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent of Admissions
Cholera	–	–	–	–	1	–	–	–	–	–	–	–	1	—	—
Small-pox	–	–	–	–	–	–	–	–	–	–	7	7	14	·09	21·43
Fever, Intermittent	620	418	466	475	934	1,065	1,035	945	819	1,093	1,538	466	9,874	62·16	
,, Remittent	6	5	5	13	22	70	51	39	130	93	11	7	452	2·84	·26
,, Continued	9	18	40	71	190	302	209	155	36	27	43	19	1,119	7·04	
Apoplexy	–	–	2	–	3	3	16	3	–	–	1	–	28	·18	53·57
Delirium Tremens	4	4	7	6	9	10	4	3	2	5	4	2	60	·38	11·67
Dysentery	41	24	19	24	55	29	40	49	58	60	62	27	488	3·07	4·30
Diarrhœa	62	37	70	99	129	117	111	204	136	93	88	37	1,183	7·45	·68
Hepatitis	54	78	94	84	115	94	100	117	86	58	63	48	991	6·24	4·14
Spleen Disease	5	4	14	21	22	20	16	18	21	15	11	4	171	1·08	·58
Respiratory Diseases	110	111	144	103	129	113	68	176	91	95	104	77	1,321	8·32	1·13
Phthisis Pulmonalis	1	4	6	6	9	6	11	10	13	11	5	5	87	·55	19·54
Scurvy	–	1	3	2	1	4	–	2	5	–	–	–	18	·11	11·11
Rheumatism	104	81	116	98	131	90	85	140	88	89	94	98	1,214	7·64	
Venereal Diseases	294	349	357	340	334	282	219	234	205	164	222	195	3,195	20·11	
Eye Diseases	56	63	58	73	70	74	36	50	62	55	47	18	662	4·17	
Abscess and Ulcer	106	131	134	138	167	167	205	191	114	89	138	89	1,649	10·38	·44
Wounds and Accidents	153	142	185	169	169	150	116	145	151	160	188	146	1,871	11·79	
All other Causes	120	181	209	238	307	229	251	114	228	177	190	135	2,579	16·23	
	1,745	1,651	1,929	1,960	2,797	2,805	2,573	2,795	2,245	2,284	2,816	1,380	26,980		
	Admitted per Cent. of Average Strength in each Month.														
	10·64	10·38	12·05	12·18	17·12	17·23	15·80	17·26	14·04	14·38	18·91	9·62	169·83		

1.—EUROPEAN TROOPS, 1864—*continued.*

COMPARATIVE STATEMENT of the Ratios of Sickness and Mortality among the European Troops serving in the various Provinces of the *Bengal* Presidency, during the Year 1864.

DISEASES.	BENGAL PROPER. Average Strength - - 2,002; Daily Sick per Cent. of Strength - - - 6·19; Admitted per Cent. of Strength - - - 151·10; Died per 1,000 of Strength— A. From Cholera - 2·50; B. From all Causes - 24·98			DINAPORE, BENARES, OUDE, AND CAWNPORE. Average Strength - 10,333; Daily Sick per Cent. of Strength - - - 5·99; Admitted per Cent. of Strength - - - 141·98; Died per 1,000 of Strength— A. From Cholera - 6·77; B. From all Causes - 26·52			MEERUT AND ROHILCUND. Average Strength - - 5,950; Daily Sick per Cent. of Strength - - - 7·24; Admitted per Cent. of Strength - - 168·79; Died per 1,000 of Strength— A. From Cholera - ·16; B. From all Causes 17·65			AGRA AND CENTRAL INDIA. Average Strength - - 4,854; Daily Sick per Cent. of Strength - - - 6·45; Admitted per Cent. of Strength - - - 187·06; Died per 1,000 of Strength— A. From Cholera - ·62; B. From all Causes - 17·31			PUNJAB. Average Strength - 15,886; Daily Sick per Cent. of Strength - - 5·61; Admitted per Cent. of Strength - - - 169·83; Died per 1,000 of Strength— A. From Cholera - ·06; B. From all Causes - 14·54			BENGAL PRESIDENCY. Average Strength - - - 40,385; Daily Sick per Cent. of Strength 6·21; Admitted per Cent. of Strength 164·16; Died per 1,000 of Strength— A. From Cholera - - 2·55; B. Out of Hospital - - 1·41; C. From all Causes - - 21·10			
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Invalided per 1,000 of Average Strength.
Cholera	·60	41·67	2·50	·88	76·92	6·77	·02	–	·16	·08	75·00	·62	–	–	·06	·37	69·59	2·55	–
Small-pox	·15	–	–	·15	33·33	·49	·33	15·00	·51	·64	9·68	·62	·09	21·43	·19	·22	16·09	·35	–
Fevers, Intermittent	24·27	1·18	·50	20·79	1·27	·39	33·08	·56	1·18	57·40	·37	1·03	62·16	·26	·88	43·46	·58	1·01	1·63
Fevers, Remittent and Continued	17·98		4·50	10·52		3·57	12·26		1·35	9·48		1·44	9·88		1·01	10·77		2·13	
Apoplexy	·15	33·33	·50	·29	83·33	2·42	·22	61·54	1·34	·18	55·56	1·03	·18	53·57	·95	·22	67·78	1·46	–
Delirium Tremens	·35	14·29	·50	·39	15·00	·58	·12	–	–	·50	8·33	·41	·38	11·67	·44	·36	11·04	·40	–
Dysentery	3·95	8·86	3·49	4·05	4·07	1·65	3·38	3·98	1·35	3·39	7·27	2·48	3·07	4·30	1·32	3·57	4·58	1·63	1·63
Diarrhœa	13·99	·36	·50	12·27	·71	·87	8·15	·82	·67	10·34	·60	·62	7·45	·68	·50	9·82	·68	·67	
Hepatitis	3·80	6·58	2·50	4·74	5·10	2·42	6·66	6·06	4·03	4·32	5·71	2·47	6·24	4·14	2·58	5·63	5·24	2·95	5·05
Spleen Disease	·95	–	–	·51	–	–	·96	–	–	1·94	–	–	1·08	·58	·06	·01	·50	·05	–
Respiratory Disease	6·39	–	–	7·46	1·69	1·26	7·44	1·81	1·34	8·49	·72	·62	8·32	1·13	·95	7·96	1·28	1·01	1·19
Phthisis Pulmonalis	·55	36·36	2·00	1·03	17·00	1·74	·48	21·43	1·01	·50	16·67	·82	·55	19·54	1·07	·79	20·44	1·61	3·32
Scurvy	–	–	–	·05	–	–	·09	–	–	·12	–	–	·11	11·11	·13	·09	5·72	·05	–
Rheumatism	7·69		–	8·40		–	7·88		–	11·02		–	7·64		–	8·41		–	3·81
Venereal Diseases	27·32		–	26·50		–	31·86		–	29·83		–	20·11		–	25·49		–	2·38
Eye Diseases	4·15	·45	3·50	4·23	·40	2·91	5·04	·40	3·53	3·81	·48	3·70	4·17	·44	2·77	4·29	·48	3·42	2·05
Abscess and Ulcer	9·74			13·10			20·54			14·26			10·38			13·04			–
Wounds and Accidents	8·84		–	9·29		·29	10·25		·34	10·63		·62	11·79		·31	10·51		·40	1·12
All other Causes	20·23		–	17·33		–	20·03		–	20·13		–	16·23		–	18·15		–	14·57
Died out of Hospital	–	–	4·49	–	–	1·16	–	–	·84	–	–	·83	–	–	1·32	–	–	1·41	–
	151·10	–	24·98	141·98	–	26·52	168·79	–	17·65	187·06	–	17·31	169·83	–	14·54	164·16	–	21·10	36·75

TABLE showing the GENERAL STATISTICS of SICKNESS and MORTALITY in the PRINCIPAL MILITARY STATIONS of the *Bengal* Presidency.

STATIONS.	Period of Observation.	Average Strength during Period of Observation.	DAILY SICK PER CENT. OF AVERAGE STRENGTH IN EACH MONTH.											Daily Sick per Cent. of Average Strength for the Period of Observation.	Admitted per Cent. of Average Strength.	DIED PER 1,000 OF AVERAGE STRENGTH.			
			Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			A. Cholera.	B. All other Causes. 1. In Hospital.	B. All other Causes. 2. Out of Hospital.	C. All Causes.
Fort William		790	4·35	8·37	10·44	10·23	8·42	9·61	13·07	11·57	7·74	7·84	5·02	5·03	8.49	180·00	2·53	13·93	5·06	21·52
Dum-Dum		592	4·45	6·15	4·61	3·98	3·78	3·39	3·43	3·33	4·89	5·88	5·12	4·95	4·42	107·43	1·69	8·44	6·76	16·89
Barrackpore		455	4·84	4·68	3·36	2·32	3·96	4·16	5·89	6·32	7·49	9·11	8·29	5·38	5·23	153·63	4·40	32·96	2·20	39·56
Berhampore	9 Months, April to December	202	–	–	–	3·21	3·63	5·83	6·65	5·78	5·97	5·55	4·21	3·36	4·89	125·25	–	24·75	–	24·75
Sinchal, Darjeeling		219	·89	·66	3·27	3·14	3·18	3·07	1·66	1·77	1·77	1·82	5·18	1·96	2·32	50·23	–	0·13	4·57	13·70
Darjeeling Depôt	8 Months, April to November	144	–	–	–	9·26	10·90	8·25	6·91	8·66	6·18	6·18	5·67	–	7·77	127·78	–	55·56	–	55·56
Hazareebaugh	6 Months, May to October	938	–	–	–	4·88	6·12	7·77	6·96	7·36	6·65	4·96	–	–	6·64	69·30	–	11·73	–	11·73
Dinapore		968	7·75	10·22	9·77	9·62	10·13	8·03	5·73	5·32	8·09	5·68	4·65	5·37	7·54	169·32	5·16	17·57	1·03	23·76
Benares		1,081	6·76	7·14	9·96	10·01	8·49	7·60	7·31	7·52	9·75	8·17	4·30	5·77	7·57	169·20	5·55	20·35	1·85	27·75
Jounpore	7 Months, March to September	149	–	–	4·82	6·07	5·48	6·77	6·39	5·16	4·45	–	–	–	5·60	70·47	–	–	–	–
Azimghur	7 Months, March to September	198	–	–	2·96	4·05	3·69	4·62	5·83	6·25	5·54	–	–	–	4·71	80·80	5·05	–	–	5·05
Fyzabad		964	3·81	4·42	4·64	4·50	4·16	4·09	5·15	6·27	6·60	4·04	3·18	4·13	4·68	115·87	1·04	8·29	1·04	10·37
Roy Bareilly	9 Months, April to December	333	–	–	–	2·80	3·43	3·67	4·35	4·37	4·35	3·47	3·04	3·09	3·61	98·50	–	9·01	–	9·01
Lucknow		2,470	3·54	4·40	5·63	5 62	6·36	6·91	7·53	6·57	7·98	7·03	6·15	4·48	6·04	170·57	15·79	27·93	·81	44·53
Seetapore		653	4·59	4·11	4·36	4·31	5·58	4·45	5·98	6·62	8·05	6·74	3·61	4·25	5·11	117·76	–	12·25	1·53	13·78
Futtehgurh		551	4·75	6·14	8·27	6·97	5·92	5·29	5·12	5·43	6·77	5·44	3·92	4·25	5·70	120·51	–	16·37	3·63	20·00
Cawnpore		1,131	4·65	5·64	6·24	7·21	5·96	6·42	5·49	6·39	5·98	5·45	4·97	4·70	5·79	129·18	5·30	19·46	·88	25·64
Allahabad		950	4·19	4·44	4·87	9·71	8·83	8·43	6·70	6·11	6·27	5·72	4·32	3·18	5·99	123·58	12·63	11·58	1·05	25·26
Nagode		198	5·40	5·58	8 65	10·15	7·54	7·39	8·14	9·74	6·16	10·71	12·01	12·09	8·36	135·35	–	10·10	–	10·10
Shahjehanpore		589	4·44	5·13	5·66	5·18	5·17	4·44	4·73	5·27	5·69	5·83	3·89	4·07	4·97	102·59	–	11·14	1·85	12·99
Bareilly		881	3·80	4·03	4·64	4·07	4·90	5·66	5·58	5·91	6·23	5·40	4·70	5·25	5·02	102·84	1·13	13·53	–	14·76
Nynee Tal Depôt	8 Months, April to November	279	–	–	–	13·00	18·28	18·71	18·36	19·56	14·76	9·37	9·55	–	15·41	159·85	–	46·59	–	46·59
Landour Depôt	8 Months, April to November	188	–	–	–	17·33	13·54	9·83	11·47	11·04	14·01	13·75	10·22	–	12·45	152·66	–	47 87	5·32	53·19
Moradabad		337	5·54	5·51	4·60	4·85	5·25	7·14	6·02	6·26	8·89	7·44	7·55	4·34	6·19	98·51	–	14·85	–	14·85
Roorkee		546	4·74	5·75	5·60	4·84	5·30	5·35	5·19	5·33	5·32	4·27	4·07	4·29	5·00	135 35	–	9·16	–	9 16
Meerut		1,880	6·81	7·34	7·60	9·52	11·43	9·58	8·51	7·05	7·27	7·16	7·45	6·31	8·02	193·40	–	12·77	·53	13·30
Delhi		904	6·15	8·34	11·08	7·16	9·08	9·79	8·32	9·78	12·31	11·50	10·90	8·32	8·94	237·76	–	21·78	1·04	22·82
Muttra	11 Months, February to December	503	–	2·70	5 11	7·91	7·32	7·21	7·28	7·36	7·92	5·10	4·99	4·55	6·14	140·38	–	7·95	1 99	9·94
Agra		1,036	3·63	5·49	6·56	5·66	6·44	7·03	4·78	5·66	5·80	6·59	6·47	6·25	5·87	108·44	–	13·49	·66	15 15
Morar		1,051	5 92	5·91	5·39	5·15	4·68	5·12	5·42	4·81	5·18	4·77	5·31	4·68	5·18	170·03	–	15 22	–	15·22
Gwalior Citadel		207	3·26	3·76	6·57	4·98	10·47	8·43	8·32	8·05	6·66	4·97	2·98	3·48	6·17	140·10	–	14·49	4 83	19·32
Scepree	7 Months, April to October	148	–	–	–	3·39	3·98	4·62	5·70	4·33	5·84	3 76	–	–	4·53	70·95	–	–	–	–
Jhansi		686	6·40	5·49	4·94	9·19	8·63	7·63	6·02	6·04	6·91	7·59	8·15	6 04	6·83	155·68	–	18·95	–	18·95
Nowgong		213	4·74	4·12	4·76	5·38	6·10	4 16	3·73	3·69	6·93	4·20	3·72	4·12	4·65	114 09	4·70	4·69	–	9 39
Saugor		817	7·05	7·36	7 52	8·55	8·49	8·02	8·51	7·43	7·83	6·88	9·77	7·82	7·98	239·66	2·45	18·36	1 29	22·03
Jubbulpore		757	5·16	6·87	7·89	7 65	8·49	8·15	7 38	10·37	10·10	8·91	7·40	6·11	7·85	248·88	–	18 49	1·32	19 81
Umballa Depôt		1,035	3·63	4 38	5·08	4·23	5·18	5 91	6·19	6·49	7·25	6·28	4·47	3·59	5·24	185·23	–	8 57	·61	9 18
Dugshaie	9 Months, February to October	709	–	4·41	4·72	6·07	6·58	6 74	6·23	5·67	5·02	4 60	–	–	5·56	74·72	–	16 27		16 27
Kussowlie	11 Months, February to December	236	–	4·65	2·78	5·20	7·38	8·09	8·87	8·82	7·84	6·42	3 08	4 96	6·34	198·73	–	12·71	4 24	16·95
Kussowlie Depôt	7 Months, April to October	402	–	–	–	7·42	11·42	10·52	11·08	10·17	10·64	10·03	–	–	10·21	139·05	–	24 88	–	24·88
Subathoo	8 Months, March to October	882	–	–	4·65	3·86	4·14	4 54	4·27	3·05	4·34	3·51	–	–	4·16	47 05	–	10·21	1 13	11·34
Phillour		105	3·21	2·93	6·09	5 69	3·82	1·39	2·92	3·83	7·16	3·76	2·83	6·17	4·18	116·19	–	9 92	–	9 92
Jullundur		893	2·11	3·29	3·65	3·87	4 36	4·02	4·20	4·17	3·87	3·87	3·06	2 32	3·57	102·24	–	14 05	1 4	15 79
Perozepore		880	2·33	4·40	4 49	3·14	4·27	5·43	6·48	6 68	7·33	5·71	5·33	4·59	5 17	142 13	–	12 36	4 37	16 73
Mooltan		934	3·10	4·50	3·57	3 92	5·10	6·36	7·26	6·60	7·65	9·15	6·44	4·46	5·58	234·90	–	9 64	2 14	11 78
Deru-Ismail-Khan		98	7·48	9·59	6·88	3·08	7·35	5·65	5·14	8·04	6·99	7·18	8·09	7·75	7·00	308 16	–	–	–	–
Sealkote		1,319	5·03	6·67	5·27	4·75	5·12	6·95	6·71	5·95	6·19	4·75	5·04	3·37	5·42	130 10	–	9 17	69	9 86
Kangra		123	3·65	1·68	2·30	4·31	2·01	2·52	2·35	·94	4·15	2·01	1·25	2·06	2·29	63 41	–	–	–	–
Umritsur and Govindghur		501	2·69	1·77	3·46	6·47	6·33	7·04	7·43	9·21	11·03	8·62	6·03	8·34	6·80	229·34	–	23 96		23·96
Fort Lahore		182	·94	1·77	1·27	1·05	2·10	2 78	3·39	6·45	7·02	4·05	3·58	4·16	3·22	180·40	–	3 30	–	39 30
Meean Meer		910	3·69	3·46	7·04	7·09	6·38	7·02	7·15	8·27	9·06	7 66	4·14	4·35	6·28	171·32	1·10	21 97	2 20	25 27
Rawul Pindee		1,671	7·08	6·85	6·68	6·97	8·35	8·31	8·79	7·56	8·11	7·11	4·72	3·60	6 92	214 48	–	10 77	1 80	12 57
Campbellpore	9 Months, April to December	423	–	–	–	4·15	4·66	5·85	8·05	5·93	4·96	4·40	2·46	4 25	4·89	122 93	–	16 33	–	16 33
Attock		145	2·01	5·48	4·39	7·55	8·17	6·90	7·48	6·70	7·61	6·83	9·40	3·53	6·47	227 50	–	13 79		13 79
Murree	6 Months, May to October	316	–	–	–	–	9·95	8 14	7 44	8·17	5·66	4·33	–	–	7·26	106·64	–	22 15	–	22 15
Road-making Detachments, Murree Hills.	6 Months, May to October	605	–	–	–	–	2·93	3·98	3 73	3·11	4·57	4·62	–	–	3·82	81·16	–	1 66	1·65	3 31
Nowshera	10 Months, January to October	807	5·42	7·01	5·59	5·22	5·48	5·78	6·45	4·07	4·15	3·88	–	–	5·30	121·98	–	7·48		7·48
Peshawur		2,012	6·79	6·63	8·23	8·23	6·77	7·65	8·17	6·25	6·10	7·59	8·41	5·56	6·86	259·59	–	12·92	1·20	14 91

I.—EUROPEAN TROOPS, 1864—*continued.*

TABLE showing the Ratio in which the PRINCIPAL DISEASES have contributed to make up the ADMISSION-RATE of the Year in the CHIEF MILITARY STATIONS of the *Bengal* Presidency.

STATIONS.	Average Strength for the period of Observation.	ADMITTED INTO HOSPITAL PER CENT. OF AVERAGE STRENGTH.											Admitted per Cent. of Average Strength from all Causes.
		Cholera.	Heat Apoplexy.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Opthalmia.	Rheumatism.	Venereal Diseases.	Diseases of the Respiratory Organs.	All other Causes.	
Fort William - -	790	·89	–	46·20	4·68	16·33	3·54	7·34	11·14	41·77	6·46	41·65	180·00
Dum-Dum - -	592	·34	·17	38·85	1·85	8·11	3·21	2·70	6·75	14·19	5·41	25·84	107·43
Barrackpore - -	455	·66	·22	40·44	3·96	18·46	3·52	1·98	3·30	19·78	5·05	56·26	153·63
Berhampore (9 months)	202	–	·50	31·19	4·45	8·42	6·44	–	5·45	21·28	10·89	36·63	125·25
Sinchal, Darjeeling -	219	–	–	2·74	2·74	2·28	1·83	·92	4·56	11·42	2·28	21·46	50·23
Darjeeling Depôt (8 months).	144	–	·69	13·89	2·78	8·34	9·72	4·86	24·30	22·91	7·65	32·64	127·78
Hazareebaugh (6 months)	938	–	·21	8·95	3·52	8·53	·96	2·67	3·73	13·22	5·33	22·18	69·30
Dinapore - - -	968	·83	·31	54·96	3·92	10·64	3·20	3·92	17·46	36·37	4·34	33·47	169·32
Benares - - - -	1,081	·65	·55	36·45	4·90	15·91	5·00	7·03	5·83	33·67	7·59	51·62	169·20
Fyzabad - - -	964	·10	–	19·92	2·59	4·05	4·77	3·11	9·13	25·31	8·71	38·18	115·87
Roy Bareilly (9 months)	333	–	–	21·92	·30	4·81	10·81	2·10	·90	15·92	7·51	34·23	98·50
Lucknow - - -	2,470	2·23	·48	41·82	6·52	20·20	4·70	4·62	6·96	20·85	8·91	53·28	170·57
Seetapore - - -	653	–	15	14·86	3·06	8·42	8·42	2·60	5·82	23·28	8·42	42·73	117·76
Futtehgurh - -	551	–	·54	26·32	1·63	5·99	3·27	7·08	8·17	25·95	8·17	33·39	128·51
Cawnpore - - -	1,131	·53	·09	30·06	1·15	9·72	4·33	3·01	8·05	29·00	7·96	35·28	129·18
Allahabad - - -	950	1·37	·11	24·63	5·16	12·74	5·47	3·16	5·37	28·63	4·21	32·73	123·58
Nagode - - -	198	–	–	18·18	1·01	1·51	1·51	2·53	19·70	38·89	6·57	45·45	135·35
Shahjehanpore - -	539	–	·19	12·43	·93	3·15	7·42	3·52	3·53	26·90	4·82	39·70	102·59
Bareilly - - -	881	·11	·23	16·57	2·84	5·79	5·56	4·77	8·29	23·27	6·58	33·83	102·84
Nynee Tal (8 months) -	279	–	–	26·88	3·22	13·98	19·36	5·37	15·77	30·11	9·68	35·48	159·85
Landour (8 months) -	188	–	–	14·36	2·13	2·66	10·11	12·76	20·21	18·62	17·02	54·79	152·66
Moradabad - - -	337	–	·30	10·68	·30	3·56	4·75	2·97	2·37	44·51	7·71	21·36	98·51
Roorkee - - -	546	–	–	39·38	6·59	9·34	3·11	2·75	8·06	17·76	7·33	41·03	135·35
Meerut - - -	1,880	–	·37	49·79	3·67	11·44	5·05	4·89	10·48	33·83	7·23	66·65	193·40
Delhi - - -	964	–	·21	90·46	4·67	7·68	7·78	7·68	6·12	37·96	7·05	68·15	237·76
Muttra (11 months) -	503	–	–	64·41	1·39	4·18	6·16	1·79	6·16	35·39	5·96	43·94	169·38
Agra - - -	1,036	–	·09	70·66	2·32	11·20	3·28	3·38	12·55	16·41	9·17	39·38	168·44
Morar - - -	1,051	–	·29	61·08	2·76	6·95	5·90	3·52	14·18	19·03	10·18	46·14	170·03
Gwalior Citadel - -	207	–	·97	20·77	2·90	8·70	3·38	3·87	6·76	28·02	6·28	58·45	140·10
Seepree (7 months) -	148	–	–	19·59	2·70	1·35	7·43	4·73	6·08	17·57	2·03	9·47	70·95
Jhansi - - - -	686	–	·29	34·69	3·21	6·12	4·81	5·40	8·89	34·69	6·12	51·46	155·68
Nowgong - - -	213	·47	–	23·47	·47	·94	1·41	5·17	16·90	15·02	4·70	45·54	114·09
Saugor - - -	817	·24	–	81·27	3·30	14·57	4·53	3·80	11·14	39·90	10·65	70·26	239·66
Jubbulpore - -	757	·13	·13	112·02	6·87	17·17	3·04	2·51	5·94	52·58	7·27	41·22	245·88
Umballa - - -	1,635	–	·06	43·36	3·00	8·93	3·00	4·16	7·34	18·29	5·93	41·16	135·23
Dugshaie (9 months) -	799	–	·13	11·02	3·00	3·88	1·00	1·50	6·38	12·27	10·01	25·53	74·72
Kussowlie (11 months)	236	–	–	44·07	·42	28·81	7·20	4·24	6·36	26·27	29·66	51·70	198·73
Kussowlie Depôt (7 months).	402	–	–	30·60	4·48	9·45	9·45	6·22	13·43	17·66	9·20	38·56	139·05
Subathoo (8 months) -	882	–	–	4·31	1·02	3·97	1·25	2·83	2·72	12·59	2·61	15·75	47·05
Phillour - - -	105	–	–	37·14	–	9·52	5·72	–	3·81	19·05	4·76	36·19	116·19
Jullundur - - -	893	–	·11	21·05	1·90	2·93	10·97	4·93	5·04	17·58	4·81	32·92	102·24
Ferozepore - - -	890	–	·22	51·91	1·24	7·08	5·50	1·46	8·99	18·54	8·88	38·31	142·13
Mooltan - - -	934	–	·22	148·39	5·14	4·18	3·64	2·03	5·14	11·13	11·14	43·79	234·80
Dera-Ismael-Khan - -	98	–	–	195·92	6·12	18·37	12·24	2·04	7·14	14·29	18·37	33·67	308·16
Sealkote - - -	1,319	–	·15	27·67	1·59	5·61	7·81	5·01	8·19	15·77	6·82	51·48	130·10
Kangra - - -	123	–	–	13·82	·81	1·63	1·63	4·07	4·88	17·88	·81	17·88	63·41
Umritsur - - -	501	–	·40	83·43	8·58	12·58	4·59	4·99	7·78	26·35	8·98	71·66	229·34
Fort Lahore - -	132	–	–	84·09	5·30	18·94	6·82	4·55	4·55	15·15	9·09	40·91	129·40
Meean Meer - -	910	·11	·11	53·52	4·83	9·34	5·16	3·30	9·45	24·40	9·78	51·32	171·32
Rawul Pindee - -	1,671	–	·30	92·16	3·29	8·38	8·56	5·98	12·27	22·08	11·25	50·21	214·48
Campbellpore (9 months)	423	–	–	69·50	·24	5·91	2·84	2·37	6·38	9·93	4·49	21·27	122·93
Attock - - -	145	–	–	124·83	3·45	7·59	8·96	4·14	3·45	15·86	4·83	54·48	227·59
Murree (6 months) -	316	–	·32	25·63	6·33	·32	25·31	6·96	6·33	9·49	3·80	22·15	106·64
Road-making Detachments, Murree Hills (6 months).	605	–	–	37·36	1·16	2·81	2·97	4·96	4·13	7·77	4·13	15·87	81·16
Nowshera (10 months)	807	–	·87	46·33	1·24	2·36	10·66	5·21	3·72	17·10	7·68	26·76	121·93
Peshawur - - -	2,012	–	·15	167·99	2·73	7·45	3·88	3·58	5·02	28·38	6·91	33·50	259·59

I.—EUROPEAN TROOPS, 1864—*continued.*

TABLE showing the PREVALENCE of SMALL-POX in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the period of Occupation.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.				
Hospital Ship "Bentinck"	74	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kidderpore Hospital	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Chinsurah Depôt	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Allahabad General Hospital	37	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–
Invalids, Recruits, and time-expired men on the march.	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–
Fort William	790	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–
Dum-Dum	592	–	–	1	–	–	–	–	–	–	–	–	1	2	–	–	–
Barrackpore	455	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	
Berhampore	202	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bhootan Field Force	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2,002	–	–	2	–	–	–	–	–	–	–	–	1	3	·15	–	–
Sinchal, Darjeeling	219	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Darjeeling Depôt	144	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hazareebaugh	938	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dinapore	968	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Benares	1,081	–	–	–	–	1	1	1	–	–	–	–		3	–	2	–
Jounpore	149	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Azimghur	198	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fyzabad	964	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Roy Bareilly	333	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lucknow	2,470	–	–	1	1	5	5	–	–	–	–	–	–	12	–	3	–
Seetapore	653	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Futtehghur	551	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cawnpore	1,131	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Allahabad	950	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nagode	198	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	10,333	–	–	1	1	·6	6	1	–	–	–	–	–	15	·15	5	·49
Shahjehanpore	539	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bareilly	881	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nynee Tal	279	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Landour	188	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moradabad	337	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Roorkee	546	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meerut	1,880	–	–	–	–	–	–	–	–	1	–	1	5	7	–	–	–
Delhi	964	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Muttra	503	–	–	–	–	–	–	–	–	–	–	3	10	13	–	3	–
	5,950	–	–	–	–	–	–	–	–	1	–	4	15	20	·33	3	·51
Agra	1,036	–	–	1	1	7	4	–	–	–	–	–	1	14	–	2	–
Morar	1,051	2	1	1	1	2	–	–	–	–	–	1	–	8	–	–	–
Gwalior Citadel	207	1	1	–	–	–	–	–	–	–	–	–	–	2	–	–	–
Seepree	148	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhansi	686	–	2	–	–	–	–	–	–	–	–	–	–	2	–	–	–
Nowgong	213	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Saugor	817	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jubbulpore	757	–	–	1	2	1	–	1	–	–	–	–	–	5	–	1	–
	4,854	3	4	3	4	10	4	1	–	–	–	1	1	31	·64	3	·62
Umballa	1,635	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dugshaie	799	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dugshaie Depôt	53	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie	236	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie Depôt	402	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subathoo	882	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phillour	105	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur	893	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–
Ferozepore	890	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Mooltan	934	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera-Ismael-Khan	98	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sealkote	1,319	–	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–
Kangra	123	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Umritsur	501	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fort Lahore	132	–	–	–	–	–	–	–	–	–	–	–	1	1	–	1	–
Meean Meer	910	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Rawul Pindee	1,671	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Campbellpore	423	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Attock	145	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Murree Convalescent Depôt	316	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Road-making Detachment, Murree Hills.	605	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowshera	807	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–
Peshawur	2,012	–	–	–	–	–	–	–	–	–	–	2	2	4	–	–	–
Nundcote Depôt	103	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Troops on the march (Punjaub)	–	–	–	–	–	–	–	–	–	–	–	3	2	5	–	1	–
	15,886	–	–	–	–	–	–	–	–	–	–	7	7	14	·09	3	·19
Troops on the march, Bengal and North Western Provinces.	–	–	–	–	–	–	–	–	–	–	–	2	–	2	–	–	–
BENGAL PRESIDENCY	40,385	3	4	6	5	16	10	2	–	1	–	14	26	87	·22	14	·35

I.—EUROPEAN TROOPS, 1864—*continued.*

TABLE showing the PREVALENCE of CHOLERA in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength during the Period of Occupation.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Hospital Ship, "Bentinck"	* 74	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kidderpore Hospital	–	–	1	1	–	–	–	–	–	–	1	2	–	5	–	3	–
Chinsurah Depôt	–	–	–	–	1	–	–	–	–	–	–	3	–	4	–	3	–
Allahabad General Hospital	37	–	1	2	–	1	–	–	–	1	–	1	–	6	–	5	–
Invalids, Recruits, and Time expired Men on the march.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fort William	790	–	2	–	1	1	–	–	–	–	1	–	2	7	–	2	–
Dum-Dum	592	–	1	–	1	–	–	–	–	–	–	–	–	2	–	1	–
Barrackpore	455	–	–	1	2	–	–	–	–	–	–	–	–	3	–	2	–
Berhampore	202	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bhootan Field Force	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2,002	–	3	1	4	1	–	–	–	–	1	–	2	12	60	5	2·50
Sinchal, Darjeeling	219	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Darjeeling Depôt	144	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hazareebaugh	938	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dinapore	968	–	–	–	*1	–	–	5	1	–	1	–	–	8	–	5	–
Benares	1,081	–	–	–	–	1	1	4	1	–	–	–	–	7	–	6	–
Jeunpore	149	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Azimghur	198	–	–	–	–	1	–	–	–	–	–	–	–	1	–	1	–
Fyzabad	964	–	–	–	1	–	–	–	–	–	–	–	–	1	–	1	–
Roy Bareilly	333	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lucknow	2,470	–	–	–	–	–	–	–	–	54	1	–	–	55	–	39	–
Seetapore	653	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Futtehgurh	551	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6	–
Cawnpore	1,131	–	–	–	–	–	1	–	4	1	–	–	–	6	–	6	–
Allahabad	950	–	–	2	–	–	–	–	–	11	–	–	–	13	–	12	–
Nagode	198	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	10,333	–	–	2	2	2	2	9	6	66	2	–	–	91	·88	70	6·77
Shahjehanpore	539	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bareilly	881	–	–	–	–	–	1	–	–	–	–	–	–	1	–	1	–
Nynee Tal	279	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Landour	188	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mooradabad	337	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Roorkee	546	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meerut	1,880	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Delhi	964	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Muttra	503	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5,950	–	–	–	–	–	1	–	–	–	–	–	–	1	·02	1	·16
Agra	1,036	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Morar	1,051	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Gwalior Citadel	207	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Seepree	148	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhansi	686	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowgong	213	–	–	–	–	–	–	–	–	1	–	–	–	1	–	1	–
Saugor	817	–	–	–	–	–	1	–	–	1	–	–	–	2	–	2	–
Jubbulpore	757	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–
	4,854	–	–	–	–	–	1	1	–	1	1	–	–	4	·08	3	·62
Umballa	1,635	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dugshaie	799	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dugshaie Depôt	53	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie	236	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kussowlie Depôt	402	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subathoo	882	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phillour	105	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur	893	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ferozepore	890	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mooltan	934	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera Ismael Khan	98	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sealkote	1,319	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kangra	123	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Umritsur	501	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fort Lahore	132	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meean Meer	910	–	–	–	–	1	–	–	–	–	–	–	–	1	–	1	–
Rawul Pindee	1,671	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Campbellpore	423	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Attock	145	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Murree Convalescent Depôt	316	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Road-making Detachments, Murree Hills.	605	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nowshera	807	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peshawur	2,012	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nundcote Depôt	103	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Troops on the march (Punjab)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	15,886	–	–	–	–	1	–	–	–	–	–	–	–	1	–	1	·06
Troops on the march, Bengal, and N. W. P.	–	–	–	9	15	–	–	–	–	–	–	–	–	24	–	12	–
BENGAL PRESIDENCY	40,385	–	5	15	22	5	4	10	6	68	5	6	2	148	·33	103	2·55

1.—EUROPEAN TROOPS, 1864—*continued.*

TABLE showing the MORTALITY in each STATION, the CAUSES of DEATH, and the Ratio of DEATHS to STRENGTH.

STATIONS.	Average Strength during the period of Occupation.	CAUSES OF DEATH IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.	Total Deaths of the Year.	DIED PER 1,000 OF AVERAGE STRENGTH. A. Cholera.	B. All other Causes. I. In Hospital.	II. Out of Hospital.	C. All Causes.
Hospital Ship "Bentinck" (9 months).	74	-	-	5	1	-	-	-	-	-	1	-	-	1	2	-	-	-	1	3	-	14	-	-	-	-
Kidderpore Hospital	-	3	-	2	-	-	1	-	-	-	4	1	1	1	7	1	-	-	-	2	1	24	-	-	-	-
Chinsurah Depôt	-	3	-	1	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	5	-	-	-	-
Allahabad General Hospital	37	5	-	-	3	2	3	-	-	-	4	-	1	-	2	-	-	1	-	3	-	24	-	-	-	-
Invalids, Recruits, and Time-expired-men on march.	-	-	-	-	-	1	1	-	-	-	1	-	-	3	3	-	-	-	-	-	-	9	-	-	-	-
Fort William	790	2	-	-	-	1	-	-	0	-	-	-	-	-	2	-	-	-	-	1	4	17	2·53	13·93	5·06	21·52
Dum-Dum	592	1	-	-	1	-	1	1	-	1	-	-	-	-	2	-	-	-	-	1	4	10	1·69	8·44	6·76	16·80
Barrackpore	455	2	-	1	1	3	-	-	1	-	3	-	-	-	2	1	-	2	-	1	1	18	4·40	32·06	2·20	39·56
Berhampore (9 months)	202	-	-	-	2	1	-	-	-	-	1	-	-	-	-	-	-	1	-	1	-	5	-	24·75	-	24·75
Bhootan Field Force	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	5	7	-	-	-	-
	2,002	5	-	1	4	5	1	1	7	1	5	-	-	-	4	1	-	3	2	3	14	57	2·50	17·00	4·49	21·98
Sinchal, Darjeeling	219	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	1	3	-	9·13	4·57	13·70
Darjeeling Depôt (8 months)	144	-	-	-	-	-	1	-	-	1	3	-	2	1	-	-	-	-	-	1	-	8	-	55·56	-	55·56
Hazareebaugh (6 months)	938	-	-	2	3	1	1	-	-	1	-	-	2	-	1	-	-	-	-	-	1	11	-	11·73	-	11·73
Dinapore	968	5	-	3	1	-	2	-	4	-	4	-	-	-	1	-	-	-	-	2	1	23	5·16	17·57	1·03	23·76
Benares	1,081	6	2	-	-	2	5	-	3	-	1	-	3	2	2	-	-	-	1	2	1	30	5·55	20·35	1·85	27·75
Jounpore (7 months)	149	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Azimghur (7 months)	198	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	5·05	-	-	5·05
Fyzabad	964	1	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	3	10	1·04	8·29	1·04	10·37
Roy Bareilly (6 months)	333	-	-	-	1	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	3	-	9·01	-	9·01
Lucknow	2,479	39	3	-	16	3	10	1	5	2	12	-	3	1	4	-	-	-	1	8	2	110	15·79	27·93	·81	44·53
Seetapore	653	-	-	-	1	-	1	-	-	-	1	-	2	1	1	-	-	-	-	1	1	9	-	12·25	1·53	13·78
Futtehgurh	551	-	-	-	2	-	2	-	-	-	-	-	1	-	2	-	-	-	-	2	2	11	-	16·37	3·63	20·00
Cawnpore	1,131	6	-	1	3	1	2	1	1	6	-	-	1	1	4	-	-	-	1	1	1	29	5·30	19·46	·88	25·64
Allahabad	950	12	-	-	-	-	1	2	2	-	3	-	-	-	2	-	-	-	-	1	1	24	12·63	11·58	1·05	25·26
Nusseerabad	198	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	2	-	10·10	-	10·10
	10,333	70	5	4	27	10	25	6	17	9	25	-	13	8	18	-	-	1	3	21	12	274	6·77	18·59	1·16	26·52
Shahjehanpore	539	-	-	-	1	-	1	-	-	-	1	-	2	-	-	-	-	-	-	1	1	7	-	11·14	1·85	12·99
Bareilly	881	1	-	-	1	1	1	-	-	1	4	-	1	-	1	-	-	-	-	2	-	13	1·13	13·53	-	14·76
Nynee Tal (8 months)	279	-	-	-	-	-	-	-	1	1	6	-	2	-	1	-	-	-	-	2	-	13	-	46·59	-	46·59
Landour (8 months)	188	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	2	5	1	10	-	47·87	5·32	53·19
Moradabad	337	-	-	-	-	-	1	-	1	-	1	-	1	-	1	-	-	-	-	-	-	5	-	11·85	-	14·85
Roorkee	546	-	-	-	1	2	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	5	-	9·16	-	9·16
Meerut	1,880	-	-	-	2	-	3	-	1	2	7	-	-	-	2	-	-	-	-	7	1	25	-	12·77	·53	13·30
Delhi	964	-	-	7	-	-	2	-	5	-	3	-	-	2	-	-	-	-	-	2	1	22	-	21·78	1·04	22·82
Muttra (11 months)	503	-	3	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	5	-	7·95	1·09	9·04
	5,950	1	3	7	5	3	8	-	8	4	24	-	8	2	6	-	-	-	2	19	5	105	·16	16·65	·84	17·65
Agra	1,086	-	2	1	1	-	1	-	-	2	2	-	1	1	-	-	-	-	-	4	1	16	-	14·49	·96	15·45
Morar	1,051	-	-	2	-	3	3	1	-	-	3	-	-	-	2	-	-	-	1	1	-	16	-	15·22	-	15·22
Gwalior Citadel	207	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	1	1	4	-	14·49	4·83	19·32
Seepree (7 months)	148	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jhansi	686	-	-	1	-	-	-	1	2	-	5	-	1	-	-	-	-	-	-	3	-	13	-	18·95	-	18·95
Nowgong	213	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	4·70	4·69	-	9·39
Saugor	817	2	-	1	2	-	-	-	2	1	1	-	1	3	1	-	-	-	-	3	1	18	2·45	18·36	1·22	22·03
Jubbulpore	757	-	1	-	1	-	-	-	8	-	1	-	-	-	1	-	-	-	1	1	1	15	-	18·19	1·32	19·81
	4,854	3	3	5	4	3	5	2	12	3	12	-	3	4	4	-	-	-	3	14	4	84	·62	15·86	·83	17·31
Umballa	1,635	-	-	-	-	-	1	1	1	1	4	-	-	2	1	-	-	1	-	2	1	15	-	8·57	·61	9·18
Dugshai (9 months)	799	-	-	-	-	-	1	-	-	1	-	-	2	1	1	-	2	3	-	2	-	13	-	16·27	-	16·27
Dugshai Depôt	53	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Kussowlie (11 months)	236	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	1	1	4	-	12·71	4·24	16·95
Kussowlie Depôt (7 months)	402	-	-	-	-	-	-	-	-	-	2	1	-	3	2	-	-	-	1	1	-	10	-	24·88	-	24·88
Subathoo (8 months)	882	-	-	-	-	-	-	-	1	2	3	-	2	1	-	-	-	-	-	-	1	10	-	10·21	1·13	11·34
Phillour	105	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	9·52	-	9·52
Jullundur	893	-	-	-	1	-	-	-	-	1	7	-	1	1	-	-	-	-	-	2	2	15	-	14·55	2·24	16·79
Ferozepore	890	-	-	1	1	-	1	-	-	-	1	-	4	1	1	-	-	-	-	1	3	14	-	12·36	3·37	15·73
Mooltan	934	-	-	2	-	-	1	2	-	-	1	-	1	-	1	-	-	1	-	-	2	11	-	9·64	2·14	11·78
Dera Ismael Khan	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sealkote	1,319	-	-	2	-	1	1	-	-	-	2	-	-	-	5	-	-	-	-	1	1	13	-	9·17	·69	9·86
Kangra	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Umritsur	501	-	-	-	-	1	1	-	4	-	3	-	1	-	-	-	-	-	1	1	-	12	-	23·95	-	23·95
Fort Lahore	132	-	1	-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	4	-	30·30	-	30·30
Meean Meer	910	1	1	2	-	-	-	1	3	-	5	-	1	-	1	-	-	2	1	3	2	23	1·10	21·97	2·20	25·27
Rawul Pindee	1,671	-	-	-	-	4	-	1	2	-	6	-	1	1	-	-	-	2	-	1	3	21	-	10·77	1·80	12·57
Campbellpore (9 months)	423	-	-	2	1	1	-	-	-	1	1	-	1	-	-	-	-	-	-	1	-	7	-	16·55	-	16·55
Attock	145	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2	-	13·79	-	13·79
Murree (6 months)	316	-	-	-	-	-	1	-	4	-	2	-	-	-	-	-	-	-	-	-	-	7	-	22·15	-	22·15
Road-making Detachments (6 months).	605	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	1·66	1·65	3·31
Nowshera (10 months)	807	-	-	-	-	-	2	-	-	-	-	-	-	-	1	-	-	-	1	2	-	6	-	7·43	-	7·43
Peshawur	2,012	-	-	3	3	2	6	1	2	2	1	-	-	3	1	-	-	-	1	1	4	30	-	12·92	1·99	14·91
Nundcote Depôt (5 months)	103	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Troops on march (Punjab)	-	-	1	1	-	-	-	-	1	-	2	-	-	1	1	-	-	-	-	2	-	9	-	-	-	-
	15,886	1	3	14	7	9	15	7	21	8	41	1	15	14	17	-	2	5	5	21	21	231	·06	13·16	1·32	14·54
Troops on the march, Bengal and North-Western Provinces.	-	12	-	2	1	1	-	-	1	-	1	-	-	2	1	-	-	-	-	1	-	22	-	-	-	-
BENGAL PRESIDENCY	40,385	103	14	41	52	34	59	16	66	27	119	2	41	35	65	2	2	14	16	87	57	862	2·55	17·14	1·41	21·10

I.—EUROPEAN TROOPS, 1864—*continued.*

TABLE showing the CAUSES of DEATH and INVALIDING.

TOTAL LOSS TO THE SERVICE BY DEATH AND INVALIDING, 2,330. PER 1,000 OF AVERAGE STRENGTH, 57·85.

NUMBER OF MEN LOST TO THE SERVICE BY DEATH, 852.

CAUSES OF DEATH.	Died in Hospital.	Died out of Hospital.	Died per 1,000 of Strength.
Variola	14	–	·35
Febris intermittens	41	–	1·01
Febris remittens	52	–	1·29
Febris continua	34	–	·84
Anthrax	1	–	–
Erysipelas	1	–	–
Dysenteria acute	55	–	1·36
Dysenteria chronica	11	–	·27
Diarrhœa	27	–	·67
Cholera	103	–	2·55
Rheumatismus	3	–	–
Syphilis secundaria	10	–	–
Hydrophobia	3	–	–
Purpura	2	–	–
Ebriositas	3	–	–
Anœmia	2	–	–
Anasarca	1	–	–
Scirrhoma	2	–	–
Scrofula	1	–	–
Phthisis pulmonalis	64	–	1·61
Hæmoptysis	1	–	
Abscessus psoanus	2	–	–
Meningitis	4	–	–
Encephalitis	2	–	–
Apoplexia	62	5	1·65
Paralysis	10	–	–
Paraplegia	2	–	–
Delirium tremens	16	–	·40
Epilepsia	6	–	–
Tetanus	1	–	–
Dementia	1	–	–
Pericarditis	2	–	·99
Morbus cordis	25	1	
Aneurisma	10	4	
Laryngitis	1	–	1·01
Bronchitis	19	–	
Pleuritis	4	–	
Pneumonia	17	–	
Asthma	1	–	–
Gastritis	2	–	–
Enteritis	5	–	–
Peritonitis	10	–	–
Hernia	1	–	–
Dyspepsia	2	–	–
Hæmatemesis	2	–	–
Splenitis	2	–	–
Hepatitis acuta	49	–	–
Hepatitis chronica	70	–	1·21
Cirrhosis	1	–	1·74
Icterus	3	–	–
Ascites	1	–	–
Albumenuria	1	–	–
Nephritis	2	–	–
Ischuria	1	–	–
Strictura urethræ	1	–	–
Abscessus	1	–	–
Atrophy	12	–	–
Accident	13	9	
Killed in action	–	3	
Explosion	–	5	
Accidental poisoning	1	–	
Suffocation from intoxication	–	1	1·46
Asphyxiated	–	1	
Drowning	–	13	
Suicide	1	11	
Homicide	–	1	
Cause unknown	1	–	–
Ratio per 1,000 for Deaths from causes not specially calculated.	–	–	2·69
	798	54	21·10

NUMBER OF MEN LOST TO THE SERVICE BY INVALIDING, 1484.

CAUSES OF INVALIDING.	Invalided for Discharge from the Service.	Invalided for Change of Climate.	Invalided per 1,000 of Strength.
Febris	12	54	1·63
Ophthalmia	43	40	2·05
Dysenteria	4	43	1·63
Diarrhœa	–	19	
Rheumatismus	1	83	3·81
Syphilis	28	61	
Iritis syphilitica	–	2	2·38
Strictura urethræ	1	4	
Purpura	–	4	–
Tænia	–	1	–
Anœmia	1	26	–
Anasarca	–	1	–
Scrofula	8	9	–
Phthisis pulmonalis	63	69	3·32
Hæmoptysis	2	–	
Meningitis	–	1	–
Apoplexia	1	1	–
Paralysis	12	7	–
Mania	4	3	
Dementia	11	7	·64
Melancholia	–	1	
Epilepsia	26	5	·77
Cephalæa	1	5	–
Neuralgia	–	7	
Otitis	–	1	–
Dysecœa	10	2	–
Stammering	1	–	–
Amaurosis	3	3	–
Pericarditis	2	–	
Morbus cordis	47	55	
Aneurisma	2	–	3·00
Varix	6	3	
Palpitatio	–	6	
Epistaxis	–	1	
Bronchitis	11	31	
Asthma	2	2	1·19
Dyspnœa	–	1	
Angina pectoris	–	1	
Enteritis	–	1	–
Peritonitis	–	1	–
Hernia	12	1	–
Dyspepsia	1	13	–
Hæmorrhois	–	1	–
Fistula in ano	1	3	–
Splenitis	1	15	–
Hepatitis	31	173	5·05
Ascites	1	–	–
Nephritis	2	2	–
Lithiasis	–	1	–
Enuresis	1	1	–
Diabetes	1	1	–
Fistula in perineo	–	2	–
Orchitis	–	12	–
Synovitis	3	–	–
Ostitis	1	2	–
Contractura	7	2	–
Necrosis	4	–	–
Caries	1	2	–
Ulcus	8	13	–
Debility (worn out)	95	88	5·20*
Dislocation	1	1	
Subluxation	2	–	
Fracture	11	2	
Contusion	4	2	1·12
Gunshot wound	5	6	
Incised wound	3	–	
Amputation	8	–	
Cause not specified	1	3	–
Ratio per 1,000 for Invaliding from causes not specially calculated.	–	–	4·96
	577	907	36·75

* Including Anœmia.

2.—NATIVE TROOPS, 1864.

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the *Bengal* Presidency during the Year 1864, and the prevalence of the principal Diseases in each Month of the Year.

(Police, Civil, and Local Corps are not included in these Tables.)

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Diseases.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
January	37,917	1,639	4·32	38	—	—	—	11	3	2	—	—	3	3	1	1	7	1	—	1	—	—	2	3	—
February	37,874	1,560	4·12	50	—	1	—	6	4	—	—	—	8	5	—	1	11	1	3	—	—	2	2	6	—
March	37,461	1,445	3·86	57	—	7	1	8	3	1	—	—	6	2	1	—	18	1	3	—	—	—	2	4	—
April	37,349	1,430	3·83	41	—	6	—	4	9	1	—	—	1	2	—	—	8	—	2	1	—	2	1	2	2
May	36,095	1,435	3·98	46	—	12	—	2	7	—	—	—	3	4	1	—	7	1	—	—	1	—	—	3	5
June	36,568	1,382	3·78	36	—	10	3	5	3	1	2	—	1	1	—	—	1	2	2	—	—	—	1	1	3
July	37,347	1,318	3·53	26	—	3	1	4	1	1	1	—	2	1	—	1	2	1	—	2	—	1	—	3	—
August	36,653	1,446	3·95	34	—	2	—	5	4	1	1	—	6	2	—	—	3	—	2	—	—	2	2	5	1
September	36,509	1,830	5·01	22	—	1	—	5	7	—	—	—	2	2	1	—	1	—	1	—	—	—	—	2	—
October	37,325	1,943	5·21	32	—	5	—	8	4	—	1	—	1	5	—	1	3	—	2	1	—	—	—	1	—
November	37,947	2,052	5·41	51	—	10	2	12	2	—	—	—	7	7	—	1	4	1	2	—	—	—	1	1	1
December	37,661	1,740	4·62	56	—	5	4	14	4	1	—	—	3	8	—	—	3	1	3	—	—	—	—	8	2
						62	11	84	51	8	5	—	43	42	4	5	68	9	20	5	1	7	11	39	14
						Died per 1,000 of the Average Strength.																			
For the Year	37,225	1,600	4·30	489*	13·13	1·67	·30	2·26	1·37	·21	·13	—	1·16	1·13	·10	·13	1·83	·24	·54	·13	·03	·18	·29	1·05	·38

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	—	—	12	26	39	16	6	6	4	9	16	7	141	·38	43·97
Small-pox	2	4	3	3	12	6	1	2	1	—	2	10	46	·12	23·31
Fever, intermittent	1,296	1,144	1,176	1,390	1,749	1,560	1,429	2,245	3,076	3,701	4,180	2,132	25,078	67·37	
„ remittent	29	29	40	71	93	47	66	95	41	81	65	25	682	1·83	·55
„ continued	6	1	4	10	9	11	4	8	1	4	4	3	65	·18	
Apoplexy	—	—	2	1	2	2	—	1	2	—	1	—	11	·03	45·46
Delirium tremens	1	—	—	—	—	—	—	—	—	1	—	—	2	·01	—
Dysentery	224	200	188	203	256	176	149	222	254	229	338	301	2,740	7·36	1 53
Diarrhœa	163	129	153	224	228	223	168	224	161	290	262	232	2,367	6·36	1·77
Hepatitis	7	7	8	5	5	1	4	6	4	5	4	5	61	·16	8·20
Spleen disease	18	28	30	16	21	17	23	20	14	15	32	17	251	·67	1·99
Respiratory diseases	170	180	162	192	197	61	68	96	65	77	131	145	1,364	3·66	4·99
Phthisis pulmonalis	4	2	5	1	3	1	3	4	3	2	3	2	33	·09	60·61
Scurvy	4	2	3	2	1	4	4	3	2	—	4	3	32	·09	3·12
Rheumatism	273	254	222	134	158	126	137	138	114	125	209	219	2,109	5·67	
Venereal diseases	141	145	153	141	162	153	176	153	120	156	206	134	1,840	4·94	
Eye diseases	29	40	67	82	112	95	85	118	113	93	90	51	975	2·62	
Abscess and ulcer	438	389	443	409	471	364	498	677	526	480	485	383	5,563	14·94	·44
Wounds and accidents	436	300	380	359	363	343	347	421	338	352	460	361	4,460	11·98	
All other causes	282	325	429	344	426	301	295	405	284	238	308	236	3,873	10·41	
	3,523	3,179	3,480	3,523	4,217	3,507	3,463	4,844	5,123	5,768	6,800	4,266	51,693		
	Admitted per Cent. of the Average Strength in each Month.														
	9·29	8·39	9·29	9·43	11·68	9·59	9·27	13·21	14·03	15·45	17·92	11·33	138·87		

* The data upon which to base a normal Death-rate for the Native Army in any year, are not afforded in a register of mortality such as is furnished in the Returns from which the present Series of Tables is compiled. From the Annual Nominal Roll of Deaths for 1864 we find, that 604 men died in hospital, on outpost duty, and while at home on furlough; and even this roll is, perhaps, in respect to certain regiments incomplete. With the addition of the deaths which are not accounted for in these Tables, the Death-rate of the year, including in the Strength of the Army men on leave at their homes, may be estimated at 15 per 1,000.

2.—NATIVE TROOPS, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in *Bengal Proper* and in *Assam* during the year 1864, and the prevalence of the principal Diseases in each month of the year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
January	7,411	315	4·25	10	–	–	–	4	–	1	–	–	–	–	–	1	2	–	–	1	–	–	–	1	–
February	7,120	304	4·27	9	–	–	–	2	–	–	–	–	2	1	–	–	2	–	–	–	–	–	–	2	–
March	7,389	292	3·97	19	–	7	1	3	–	–	–	–	2	2	–	–	2	–	1	–	–	–	–	1	–
April	7,863	325	4·13	14	–	6	–	–	–	–	–	–	1	–	–	–	1	1	1	–	–	1	–	1	–
May	8,086	385	4·76	15	–	10	–	–	1	–	–	–	–	2	–	–	1	–	–	–	1	–	–	1	–
June	8,122	358	4·41	16	–	7	–	3	1	–	1	–	1	1	–	–	–	–	–	–	–	–	–	1	1
July	8,002	377	4·71	10	–	3	–	2	–	–	1	–	1	–	–	–	–	–	–	1	–	1	1	–	–
August	7,568	406	5·36	12	–	1	–	2	–	–	–	–	2	2	–	–	–	–	–	–	–	2	–	3	–
September	7,713	385	4·99	7	–	–	–	1	2	–	–	–	2	1	–	–	–	–	–	1	–	–	–	–	–
October	7,497	362	4·83	14	–	3	–	3	2	–	1	–	–	5	–	–	–	–	–	–	–	–	–	–	–
November	8,497	434	5·11	19	–	10	–	2	–	–	–	–	1	2	–	–	2	1	1	–	–	–	–	–	1
December	9,916	538	5·43	20	–	4	–	5	1	–	–	–	2	5	–	–	–	–	–	–	–	–	–	1	2
						51	1	27	7	1	3	–	14	21	–	1	10	1	4	3	1	4	2	10	4
						Died per 1,000 of Average Strength.																			
For the Year	7,929	373	4·70	165	20·81	6·43	·13	3·41	·88	·13	·38	–	1·76	2·65	–	·13	1·26	·13	·50	·38	·13	·50	·25	1·26	·50

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	12	17	31	12	5	2	2	6	15	6	108	1·36	47·22
Small-pox	1	2	–	–	3	–	1	–	–	–	–	–	7	·09	14·29
Fever, intermittent	301	238	288	342	512	417	444	610	453	535	771	681	5,592	70·53	
„ remittent	10	12	9	13	21	25	49	73	21	44	15	7	299	3·77	·59
„ continued	2	–	–	–	1	2	–	–	–	2	–	–	7	·09	
Apoplexy	–	–	–	–	1	1	–	–	1	–	–	–	3	·04	100·00
Delirium tremens	–	–	–	–	–	–	–	–	–	1	–	–	1	·01	1·45
Dysentery	59	73	56	72	103	58	44	49	57	72	129	191	963	12·15	2,02
Diarrhœa	78	56	72	113	132	108	60	76	54	93	104	94	1,040	13·12	– –
Hepatitis	2	2	4	2	1	–	–	–	1	–	–	1	13	·16	1·47
Spleen disease	3	4	9	3	9	3	12	8	6	–	4	7	68	·86	3·46
Respiratory diseases	34	40	38	23	29	9	15	19	14	10	28	30	289	3·64	57·11
Phthisis pulmonalis	–	1	3	–	1	–	–	1	–	–	1	–	7	·09	20·00
Scurvy	–	1	1	–	–	1	1	–	–	–	1	–	5	·06	–
Rheumatism	39	53	48	31	53	37	31	33	21	18	51	48	463	5·84	
Venereal diseases	29	12	21	31	33	25	29	24	27	24	34	25	314	3·96	
Eye diseases	5	6	15	9	8	12	14	12	12	14	9	6	122	11·54	
Abscess and ulcer	60	73	90	66	100	55	84	110	68	56	54	65	881	11·11	·67
Wounds and accidents	64	53	90	69	69	73	49	62	47	60	70	92	798	10·06	
All other causes	64	68	102	76	137	85	70	134	77	59	86	61	1,019	2·85	
	751	694	858	867	1,244	923	908	1,213	861	994	1,372	1,314	11,999		
	Admitted per Cent. of Average Strength in each Month.														
	10·13	9·75	11·66	11·02	15·38	11·36	11·35	16·03	11·16	13·26	16·15	13·25	151·33		

2.—NATIVE TROOPS, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the *Dinapore, Benares, Oude,* and *Cawnpore* Districts, during the Year 1864, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
January	7,332	243	3·31	2		-	-	-	-	-	-	-	1	-	-	-	2	1	-	-	-	-	1	-	-
February	7,502	230	3·07	8		1	-	-	2	-	-	-	1	-	-	-	2	-	1	-	-	-	1	-	-
March	7,526	224	2·98	5		-	-	1	-	-	-	-	-	-	-	-	1	-	1	-	-	-	1	-	-
April	6,207	199	3·21	1		-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
May	6,453	205	3·18	9		2	-	-	-	-	-	-	1	1	1	-	2	-	-	-	-	-	-	-	2
June	7,477	249	3·33	10		3	3	1	1	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	1
July	7,703	220	2·86	9		-	1	1	-	-	-	-	1	1	-	1	-	1	-	1	-	-	-	-	1
August	7,617	228	2·99	6		1	-	1	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	1	-
September	7,529	281	3·73	5		1	-	-	2	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	1
October	6,354	248	3·90	5		-	-	-	-	-	-	-	-	-	-	1	3	-	-	-	-	-	-	-	1
November	5,665	211	3·72	1		-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
December	5,971	192	3·22	3		-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-
						8	5	4	7	-	-	-	5	3	2	2	11	3	2	2	-	-	4	4	2
						Died per 1,000 of the Average Strength.																			
For the Year	6,945	227	3·27	64	9·22	1·15	·72	·58	1·01	-	-	-	·72	·43	·29	·29	1·58	·43	·29	·29	-	-	·58	·58	·28

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	-	-	-	3	4	4	1	4	1	-	-	-	17	·24	47·06
Small-pox	-	-	1	-	8	6	-	2	1	-	-	2	20	·29	25·00
Fever, intermittent	143	113	128	123	203	201	236	389	373	373	331	201	2,814	40·52	
,, remittent	-	2	2	4	2	9	1	6	9	6	6	4	51	·73	·38
,, continued	-	-	1	3	2	1	3	5	-	1	-	-	16	·23	
Apoplexy	-	-	-	-	-	-	-	-	1	-	-	-	1	·01	·00
Delirium tremens	1	-	-	-	-	-	-	-	-	-	-	-	1	·01	·00
Dysentery	20	13	24	24	43	41	13	34	45	33	23	32	345	4·97	1·45
Diarrhœa	6	8	22	20	18	26	21	21	19	11	22	11	205	2·95	1·46
Hepatitis	-	-	-	1	1	-	2	3	2	3	-	1	13	·19	15·38
Spleen disease	5	7	4	5	5	4	5	4	2	4	2	2	49	·71	4·08
Respiratory diseases	18	19	14	10	16	9	15	18	12	13	17	31	192	2·77	5·73
Phthisis pulmonalis	-	1	-	-	-	1	1	-	1	1	1	-	6	·09	33·33
Scurvy	-	-	-	-	-	-	1	1	-	-	1	-	3	·04	·00
Rheumatism	24	22	28	24	31	26	23	30	28	26	34	24	320	4·61	
Venereal diseases	17	30	25	18	16	27	30	29	15	25	39	32	303	4·36	
Eye diseases	2	6	7	12	16	8	9	29	21	17	12	12	151	2·18	
Abscess and ulcer	89	66	72	66	71	66	97	110	99	65	74	73	948	13·65	·49
Wounds and accidents	38	35	41	54	52	51	55	53	53	40	36	36	544	7·83	
All other causes	61	59	131	66	80	64	48	60	55	64	49	34	771	11·10	
	424	381	500	433	568	544	561	798	737	682	647	495	6,770		
	Admitted per Cent. of the Average Strength in each Month.														
	5·78	5·08	6·64	6·98	8·80	7·28	7·28	10·48	9·79	10·73	11·42	8·29	97·48		

2.—NATIVE TROOPS, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the *Meerut* and *Rohilkund* Districts during the Year 1864, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Number Daily Sick per Cent. of Strength.	Number of Deaths.	Died per 1,000 of Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
January	2,175	91	4·18	2					2																
February	2,386	89	3·73	7					2								2	1	1					1	
March	2,889	140	4·85	3					1								1		1						
April	4,926	218	4·43	3					1								2								
May	4,972	224	4·51	9				1	1								1	1						3	2
June	5,255	199	3·79	2					1																1
July	5,299	177	3·34	2				1									1								
August	5,299	213	4·02	4					1	1	1						1								
September	5,157	223	4·32	2													1							1	
October	4,434	199	4·49	2				2																	
November	5,006	216	4·31	6				1	1				1			1			1				1		
December	4,865	163	3·35	7			1		1					1										4	
						–	1	5	11	1	1	–	1	1	–	1	9	2	3	–	–	–	1	9	3
						Died per 1,000 of the Average Strength.																			
For the Year	4388	179	4·08	49	11·17	–	·23	1·14	2·51	·23	·23	–	·23	·23	–	·23	2·05	·45	·68	–	–	–	·23	2·05	·68

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	–	3	2	–	–	–	1	–	–	–	6	·14	–
Small-pox	–	–	–	–	1	–	–	–	–	–	–	1	2	·05	50·00
Fever, intermittent	39	43	76	209	278	169	125	213	188	196	217	81	1,834	41·80	
,, remittent	6	3	5	6	4	5	5	5	1	4	3	5	52	1·19	·90
,, continued	–	–	–	1	3	–	–	3	–	–	–	1	8	·18	
Apoplexy	–	–	–	–	–	–	–	1	–	–	–	–	1	·02	100·00
Delirium tremens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dysentery	7	3	4	17	31	20	13	15	30	20	27	15	202	4·60	·50
Diarrhœa	–	3	6	20	6	20	11	16	8	2	10	13	115	2·62	·87
Hepatitis	–	–	–	1	–	–	1	–	–	1	1	1	5	·11	·00
Spleen disease	2	–	5	1	1	6	2	3	–	3	1	2	26	·59	3·85
Respiratory diseass	10	14	28	19	19	10	11	16	12	10	15	9	173	3·94	5·20
Phthisis pulmonals	1	–	1	1	–	–	1	1	–	–	–	–	5	·11	60·00
Scurvy	1	–	–	1	–	1	–	–	–	–	–	–	3	·07	·00
Rheumatism	26	17	24	25	19	20	26	18	17	13	33	36	274	6·24	
Venereal diseases	12	9	7	21	27	25	37	26	15	24	42	16	261	5·95	
Eye diseases	1	3	3	15	37	28	20	21	16	11	19	6	180	4·10	·51
Abscess and ulcer	51	55	94	106	132	101	111	171	118	106	145	60	1,250	28·49	
Wounds and accidents	24	25	25	54	53	56	48	77	35	31	74	47	549	12·51	
All other causes	24	25	38	22	41	37	40	55	46	28	30	23	439	10·01	
	204	200	316	552	654	498	451	641	487	449	617	316	5,385		
	Admitted per Cent. of Average Strength in each Month.														
	9·38	8·38	10·94	11·21	13·15	9·48	8·51	12·10	9·44	10·13	12·33	6·50	122·72		

2.—NATIVE TROOPS, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the *Agra District* and in *Central India* during the Year 1864, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. †Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
January -	5,295	210	3·97	5										1	1		2							1	
February -	5,634	208	3·69	1				1									1	1						1	
March -	5,098	192	3·77	5				1		1							1	1						1	
April -	5,086	183	3·60	1													1								
May -	4,973	190	3·82	2					1								1								
June -	5,031	166	3·30	2							1														1
July -	5,069	151	2·98	1																					1
August -	5,113	196	3·83	3				1																1	1
September-	5,084	258	5·07	4				1	2															1	
October -	4,633	311	6·71	4				2	1										1						
November -	4,689	335	7·14	2				1									1								
December -	4,103	210	5·12	5				1						1			1		2						
						-	-	7	4	1	1	-	-	2	1	-	8	1	3	-	-	-		4	2
						Died per 1,000 of Average Strength.																			
For the Year	4,984	217	4·35	34	6·82	-	-	1·41	·80	·20	·20	-	-	·40	·20	-	1·61	·20	·60	-	-	-	-	·80	·40

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small-pox - - - -	1	2	2	1	-	-	-	-	-	-	-	-	6	·12	-
Fever, intermittent - - -	134	128	150	223	202	154	143	306	351	515	615	250	3,171	63·62	·37
,, remittent - - -	2	8	-	10	8	3	1	3	3	15	14	-	67	1·35	
,, continued - - -	1	-	1	-	-	1	-	-	-	-	-	-	3	·06	
Apoplexy - - - -	-	-	-	-	1	-	-	-	-	-	-	-	1	·02	-
Delirium tremens - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dysentery - - - -	18	6	15	8	19	7	8	16	24	8	33	8	170	3·41	-
Diarrhœa - - - -	5	2	2	6	13	13	6	32	25	9	6	11	130	2·61	1·54
Hepatitis - - - -	1	-	1	-	-	-	-	-	-	-	1	2	5	·10	40·00
Spleen disease - - -	3	5	6	4	2	1	2	2	3	4	7	2	41	·82	-
Respiratory diseases - -	14	24	17	16	8	11	9	13	9	5	18	10	154	3·09	5·19
Phthisis pulmonalis - - -	1	-	-	-	1	-	-	-	1	-	-	2	5	·10	60·00
Scurvy - - - -	-	-	-	-	-	-	-	-	1	-	-	-	1	·02	-
Rheumatism - - - -	43	33	32	12	11	15	13	24	20	16	14	16	249	5·00	
Venereal diseases - - -	33	39	35	28	37	26	31	34	25	30	37	18	373	7·49	
Eye diseases - - - -	4	7	8	15	16	9	12	10	11	8	14	6	120	2·41	
Abscess and ulcer - - -	64	78	64	58	54	47	67	100	116	88	62	53	851	17·08	·22
Wounds and accidents - -	69	38	31	46	62	35	53	71	64	48	63	56	636	12·76	
All other causes - - -	34	82	47	42	53	25	30	41	30	17	30	24	455	9·13	
	427	452	411	469	487	347	375	652	683	763	914	458	6,438		
	Admitted per Cent. of Average Strength in each Month.														
	8·07	8·02	8·06	9·22	9·79	6·90	7·40	12·75	13·44	16·47	19·49	11·16	129·19		

2.—NATIVE TROOPS, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the *Punjab* during the Year 1864, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anemia.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
January	8,954	408	4·56	7	–	–	–	4	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	1	–
February	9,562	445	4·65	10	–	–	–	–	–	–	–	–	4	3	–	–	2	–	–	–	–	–	–	1	–
March	10,261	400	3·90	13	–	–	–	1	–	–	–	–	3	–	–	–	6	–	–	–	–	–	1	2	–
April	10,101	412	3·71	14	–	–	–	4	4	–	–	–	–	2	–	–	2	–	1	–	–	–	–	–	1
May	10,719	383	3·57	8	–	–	–	1	1	–	–	–	2	1	–	–	2	–	–	–	–	–	–	–	1
June	10,683	410	3·84	6	–	–	–	1	–	1	–	–	–	–	–	–	1	1	2	–	–	–	–	–	–
July	11,274	393	3·49	5	–	–	–	–	1	1	–	–	–	–	–	–	1	–	–	–	–	–	1	1	–
August	11,056	403	3·65	9	–	–	–	1	2	–	–	–	3	–	–	–	1	–	2	–	–	–	–	–	–
September	11,026	683	6·19	4	–	–	–	3	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
October	11,014	705	6·40	5	–	–	–	1	1	–	–	–	1	–	–	–	–	–	1	–	–	–	–	1	–
November	10,029	685	6·83	20	–	–	2	8	–	–	–	–	4	4	–	–	1	–	–	–	–	–	–	–	1
December	10,372	533	5·14	19	–	1	2	8	1	1	–	–	1	1	–	–	1	–	1	–	–	–	–	2	–
						1	4	32	11	3	–	–	19	12	–	–	17	1	7	–	–	–	2	8	3
						Died per 1,000 of Average Strength.																			
For the Year	10,504	488	4·65	120	11·42	·09	·38	3·05	1·05	·29	–	–	1·80	1·14	–	–	1·62	·09	·67	–	–	–	·19	·76	·29

CAUSES OF ADMISSIONS.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	–	–	–	–	–	–	–	–	–	1	1	·01	–
Small-pox	–	–	–	2	–	–	–	–	–	–	2	7	11	·10	36·36
Fever, intermittent	368	326	275	379	474	619	481	727	1,711	1,941	2,080	849	10,230	97·39	·44
„ remittent	8	2	9	27	37	5	10	8	7	6	3	7	129	1·23	
„ continued	3	1	–	6	3	7	1	–	1	–	–	1	23	·22	
Apoplexy	–	–	1	–	–	1	–	–	–	–	1	–	3	·03	–
Delirium tremens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dysentery	52	53	64	73	59	50	71	108	98	68	72	44	812	7·73	2·34
Diarrhœa	33	34	27	42	43	56	70	79	55	45	79	98	661	6·29	1·82
Hepatitis	1	4	1	1	3	1	1	3	1	1	1	–	18	·17	–
Spleen disease	3	5	4	2	3	3	2	3	3	3	17	4	52	·50	–
Respiratory diseases	55	57	37	30	35	22	18	30	18	25	33	65	425	4·05	4·00
Phthisis pulmonalis	–	–	1	–	1	–	1	2	1	1	–	–	7	·07	100·00
Scurvy	3	1	1	1	1	2	2	2	1	–	2	3	19	·18	–
Rheumatism	80	96	67	29	43	28	44	33	28	39	64	77	628	5·98	
Venereal diseases	35	46	48	36	44	50	49	40	38	36	37	35	494	4·70	
Eye diseases	10	13	26	24	32	38	30	46	53	33	28	16	349	3·32	·27
Abscess and ulcer	100	60	83	88	113	95	139	186	125	102	99	102	1,292	12·30	
Wounds and accidents	110	104	138	108	126	128	142	158	139	122	122	81	1,478	14·07	
All other causes	51	65	74	88	109	90	107	115	76	55	86	86	1,002	9·54	
	912	867	856	936	1,126	1,195	1,168	1,540	2,355	2,477	2,726	1,476	17,634		
	Admitted per Cent. of Average Strength in each Month.														
	10·19	9·07	8·34	8·48	10·50	11·19	10·36	13·93	21·36	22·49	27·18	14·23	167·88		

COMPARATIVE STATEMENT of the Ratios of SICKNESS and MORTALITY among the NATIVE TROOPS serving in the various Provinces of the *Bengal* Presidency during the Year 1864.

DISEASES.	BENGAL PROPER. Average Strength - 7,929 Daily Sick per Cent. of Strength - - 4·70 Admitted per Cent. of Strength - - 151·33 Died per 1,000 of Strength— A. From Cholera - 6·43 B. From all Causes 20·81			DINAPORE, BENARES, OUDE, AND CAWNPORE DISTRICTS. Average Strength - 6,945 Daily Sick per Cent. of Strength - - 3·27 Admitted per Cent. of Strength - - 97·48 Died per 1,000 of Strength— A. From Cholera - 1·15 B. From all Causes 9·22			MEERUT AND ROHILKUND DISTRICTS. Average Strength - 4,388 Daily Sick per Cent. of Strength - 4·08 Admitted per Cent. of Strength - - 122·72 Died per 1,000 of Strength— A. From Cholera - - B. From all Causes 11·17			AGRA DISTRICT, AND CENTRAL INDIA. Average Strength - 4,984 Daily Sick per Cent. of Strength - - 4·35 Admitted per Cent. of Strength - - 129·19 Died per 1,000 of Strength— A. From Cholera - - B. From all Causes 6·82			PUNJAB. Average Strength - 10,504 Daily Sick per Cent. of Strength - - 4·65 Admitted per Cent. of Strength - - 167·88 Died per 1,000 of Strength— A. From Cholera ·09 B. From all Causes 11·42			TROOPS on the MARCH† (7 months, January to April, and October to December). Average Strength - 4,114 Daily Sick per Cent. of Strength - - 4·64 Admitted per Cent. of Strength - - 84·27 Died per 1,000 of Strength— A. From Cholera - ·49 B. From all Causes 13·12			BENGAL PRESIDENCY. Average Strength - 37,225 Daily Sick per Cent. of Strength - - 4·30 Admitted per Cent. of Strength - - 138·87 Died per 1,000 of Strength— A. From Cholera - 1·67 B. From all Causes 13·13		
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.
Cholera	1·36	47·22	6·43	·24	47·06	1·15	·14	–	–	–	–	–	·01	–	·09	·22	22·22	·49	·38	43·97	1·67
Small-pox	·09	14·29	·13	·29	25·00	·72	·05	50·00	·23	·12	–	–	·10	36·36	·38	–	–	–	·12	23·91	·30
Fever, Intermittent	70·53	·59	3·41	40·52	·38	·58	41·80	·90	1·14	63·62	·37	1·41	97·39	·44	3·05	34·93	1·44	2·19	67·37	·55	2·30
Fever, Remittent and Continued.	3·86		1·01	·96		1·01	1·37		2·74	1·41		1·00	1·45		1·34	2·23		3·16	2·01		1·53
Apoplexy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·03	45·46	·13
Delirium Tremens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·01	–	–
Dysentery*	12·15	1·45	1·76	4·97	1·45	·72	4·60	·50	·23	3·41	–	–	7·73	2·34	1·80	6·03	1·21	·73	7·36	1·53	1·16
Diarrhœa	13·12	2·02	2·65	2·95	1·46	·43	2·62	·87	·23	2·61	1·54	·40	6·29	1·82	1·14	5·25	1·39	·73	6·36	1·77	1·13
Hepatitis	·16	–	–	·19	15·38	·29	·11	–	–	·10	40·00	·40	·17	–	–	·17		·24	·16	8·20	·13
Spleen Disease	·86	1·47	·13	·71	4·08	·29	·59	3·85	·23	·82	–	–	·50	–	–	·36	6·67	·24	·67	1·99	·13
Respiratory Diseases	3·64	3·46	1·26	2·77	5·73	1·38	3·94	5·20	2·05	3·09	5·19	1·61	4·05	4·00	1·62	3·18	9·92	3·16	3·66	4·99	1·83
Phthisis Pulmonalis	·09	57·11	·50	·09	33·33	·29	·11	60·00	·68	·10	60·00	·60	·07	100·00	·67	·07	–	·24	·09	60·61	·54
Scurvy	·06	20·00	·13	·04	–	–	·07	–	–	·02	–	–	·18	–	–	·03	–	–	·09	3·12	·03
Rheumatism	5·84			4·61			6·24			5·00			5·98			4·25			5·67		
Venereal Diseases	3·96			4·36			5·95			7·49			4·70			2·31			1·94		
Eye Diseases	1·54			2·18			4·10			2·41			3·32			1·29			2·62		
Abscess and Ulcer	11·11	·67	2·90	13·65	·49	1·88	28·49	·51	2·96	17·08	·22	1·00	12·30	·27	1·04	8·29	·61	1·94	14·94	·44	1·86
Wounds and Accidents	10·90			7·83			12·51			12·76			14·07			11·06			11·98		
All other Causes	12·90			11·12			10·03			9·15			9·57			4·60			10·41		
Died out of Hospital	–	–	·50	–	–	·28	–	–	·68	–	–	·40	–	–	·29	–	–	–	–	–	·38
	151·33	–	20·81	97·48	–	9·22	122·72	–	11·17	129·19	–	6·82	167·88	–	11·42	84·27	–	13·12	135·87		13·13

* As in the case of the gaol population, the dysentery and diarrhœa of the Native Army should be entered under one heading.
† Troops returning to cantonments after the conclusion of the Eusufzai campaign, and on the march to Bhootan; and regiments on the march in the course of the annual relief.

2.—NATIVE TROOPS, 1864—*continued.*

STATEMENT showing the DAILY AVERAGE SICK RATE of each Station in each Month, and the Ratio in which the CHIEF DISEASES have contributed to make up the ANNUAL ADMISSION-RATE of the STATIONS of the Presidency.

STATIONS.	Average Strength for the Period of Observation.	DAILY SICK PER CENT. OF AVERAGE STRENGTH IN EACH MONTH.												Average Daily Sick per Cent. of Strength for the Year.	ADMITTED INTO HOSPITAL PER CENT. OF AVERAGE STRENGTH.										Admitted per Cent. of Strength during the Period of Observation.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Cholera.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Diseases of the Respiratory Organs.	All other Causes.	
Fort William	349	5·58	2·02	2·94	1·75	2·91	2·67	2·24	3·54	3·40	2·97	4·63	8·06	3·29	4·01	51·29	13·75	15·47	–	·86	·29	2·86	6·02	4·30	14·04	112·89
Alipore	576	6·90	5·97	5·84	5·65	4·87	5·19	5·62	5·03	5·50	5·56	4·93	8·26	5·85	1·39	30·21	15·45	10·94	–	·52	·69	8·16	5·21	6·08	28·99	107·64
Barrackpore	1,341	2·15	2·42	2·99	4·08	4·04	4·33	4·60	5·30	4·16	3·95	3·37	2·49	3·66	·60	65·10	8·05	11·78	·22	1·42	1·27	5·30	5·44	3·28	28·86	131·32
Berhampore	171	·86	1·61	1·21	1·81	1·18	1·58	1·60	6·85	10·82	8·21	15·92	14·34	4·91	–	152·05	6·43	19·88	–	1·17	1·17	1·17	2·34	1·17	14·62	200·00
Dacca (9 months)	584	–	–	–	5·45	8·67	5·27	5·66	5·19	5·88	5·61	4·52	5·20	5·63	6·85	62·84	10·28	26·71	·17	·17	·34	1·88	2·57	2·40	12·16	126·37
Chittagong	333	13·21	13·54	13·57	16·78	20·36	13·54	13·40	12·53	13·47	11·10	16·85	20·45	14·89	–	291·59	12·61	9·91	·30	2·40	1·20	8·41	4·81	4·81	84·08	420·12
Cherrapoonjee	412	3·39	3·51	4·19	2·72	2·96	4·18	3·02	5·33	2·53	2·72	2·65	2·49	3·35	·24	25·73	9·22	3·64	–	·24	·97	4·37	3·16	2·67	19·66	69·90
Sylhet and Jowai	455	9·03	9·75	6·14	4·13	7·09	7·61	7·15	7·38	7·50	7·73	9·63	8·72	7·51	2·86	81·76	23·95	24·18	·44	·44	2·20	9·45	8·35	7·69	35·82	197·14
Gowalparah	188	4·74	2·02	1·74	·47	2·27	1·17	1·30	4·00	4·39	5·79	4·08	7·54	3·15	1·06	59·57	10·11	7·45	·53	2·66	1·60	2·13	7·98	2·66	17·55	113·30
Gowhatty*	361	·65	·87	1·83	1·00	·78	·40	2·12	1·19	1·97	1·32	1·67	1·63	1·32	1·38	28·53	7·48	4·99	·28	1·66	·83	1·11	1·94	1·38	11·36	60·94
Tezpore (9 months)	210	–	–	–	3·29	5·30	6·14	6·77	5·88	4·34	5·70	7·35	7·32	5·79	–	145·24	3·81	14·76	–	·48	·95	4·76	3·81	2·86	44·28	220·95
Debrooghur	647	4·57	5·86	2·63	3·44	2·73	3·46	5·67	7·55	7·46	7·46	8·37	7·04	5·41	·46	85·16	11·28	11·90	–	·93	2·16	12·52	1·55	5·41	52·55	183·92
Jalpigoree	883	5·51	4·62	3·84	4·10	4·64	4·74	4·43	4·28	4·09	4·46	5·29	7·67	4·88	·57	60·47	13·25	17·44	·23	·79	2·04	8·04	2·04	3·85	48·47	157·19
Bhaugulpore	465	2·50	2·81	1·71	2·13	2·78	2·31	1·55	1·78	1·15	2·11	1·71	1·25	1·99	–	45·81	5·59	14·84	–	–	1·07	1·50	·86	–	63·66	133·33
Dorundah	602	1·77	3·28	4·35	3·02	3·05	2·97	4·64	5·84	5·46	4·49	4·06	3·57	3·86	–	67·28	10·96	·17	–	·66	2·33	4·32	2·49	3·65	18·77	110·63
Dinapore	587	1·24	·86	1·34	2·18	1·67	2·20	1·14	2·62	1·81	3·45	1·94	1·21	1·77	·85	37·31	1·19	2·05	–	1·19	·34	3·75	1·36	1·53	19·93	69·50
Segowlee	355	4·51	4·47	3·78	3·68	2·92	2·38	2·32	2·64	4·15	4·03	4·14	3·21	3·55	–	24·23	5·35	1·41	·56	·56	1·97	6·20	17·75	4·79	19·72	82·54
Benares	551	2·50	3·12	1·96	3·88	4·17	6·15	4·05	3·86	4·66	4·12	2·65	2·25	3·62	·54	41·74	8·17	2·72	·54	·36	3·63	5·63	5·63	2·00	39·20	110·16
Goruckpore	630	3·23	3·21	2·54	2·36	3·09	3·25	3·02	3·13	3·08	3·21	3·41	3·28	3·07	–	49·84	8·57	2·22	–	·16	2·86	6·19	4·13	2·22	25·71	101·90
Fyzabad (7 months)	679	–	–	–	–	–	2·89	2·88	3·04	2·93	3·46	3·66	3·42	3·19	·15	42·86	3·24	5·15	–	·30	1·03	4·12	3·53	2·65	16·79	79·82
Lucknow	1,588	3·80	2·39	3·21	3·09	4·44	4·82	3·87	3·68	4·34	2·37	2·57	2·23	5·37	·19	35·77	3·97	3·02	–	·94	1·45	3·97	2·52	3·21	41·06	96·10
Seetapore (9 months)	478	2·33	2·44	2·82	2·59	3·33	3·38	2·16	2·84	2·38	–	–	–	2·69	·21	17·57	2·72	1·67	·21	–	1·26	3·97	·84	·42	26·15	55·02
Cawnpore (10 months)	796	3·41	4·01	2·77	1·85	2·16	1·75	1·51	1·73	1·92	2·33	–	–	2·38	–	16·33	1·88	2·64	·13	·38	2·51	2·64	3·89	2·64	17·09	50·13
Banda	383	3·15	4·38	4·09	3·87	2·81	2·35	2·92	3·39	11·31	6·06	3·49	1·75	4·11	·52	90·86	9·66	3·66	·26	3·66	1·83	3·66	3·39	3·91	39·95	161·36
Humeerpore	431	4·36	3·67	3·02	2·87	2·80	3·53	3·86	3·32	5·31	5·74	5·30	5·87	4·25	–	83·06	11·60	2·09	·70	·23	6·03	6·49	3·25	3·25	52·67	169·37
Nagode	570	4·70	4·25	4·94	5·35	2·87	1·22	1·30	1·41	1·84	9·30	10·88	7·70	3·91	·18	21·40	·70	1·58	–	·18	1·05	2·45	2·63	·88	34·21	65·26
Allahabad (10 months)	518	2·94	2·80	2·69	–	–	4·85	4·84	5·22	4·53	5·16	4·68	4·42	4·00	·19	25·29	3·09	2·90	·38	·19	1·74	3·67	6·56	2·90	24·52	71·43
Shahjehampore	309	3·70	3·78	3·25	3·83	4·67	3·92	2·95	4·62	5·53	4·41	3·46	3·43	3·87	·32	37·22	3·56	1·94	–	·32	1·30	9·71	8·09	3·56	74·11	140·13
Bareilly	866	4·55	4·36	3·98	3·64	4·15	2·81	2·11	3·81	4·88	3·78	4·59	3·48	3·82	·23	34·18	5·43	2·19	·23	–	3·00	7·62	5·08	5·20	41·57	104·73
Roorkee and Camp Munglour (9 months).	895	–	–	5·57	5·30	5·66	4·10	3·50	3·42	3·23	6·19	4·38	4·93	4·36	·22	38·44	5·03	3·35	–	1·01	8·94	6·59	3·80	3·57	33·74	104·69
Almorah (9 months)	524	–	–	–	2·25	1·86	2·17	3·63	3·37	2·77	2·43	2·94	2·53	2·61	–	46·95	·38	3·24	–	–	2·29	3·24	7·82	1·53	21·95	87·40
Moradabad (9 months)	391	–	–	–	3·22	2·81	4·36	3·69	2·63	2·62	2·49	2·52	2·62	3·00	·26	21·74	2·56	1·53	–	·51	3·58	4·35	7·42	1·28	29·92	73·15
Meerut	817	1·50	1·11	1·20	2·48	2·78	3·00	2·84	2·75	2·78	2·91	3·79	3·28	2·71	–	25·09	3·67	1·71	·37	·61	4·41	4·41	5·87	3·43	40·27	89·84
Allyghur (9 months)	411	–	–	–	2·23	1·62	1·04	1·16	2·81	1·68	1·10	1·17	1·32	1·58	–	13·87	·97	1·70	–	–	·25	3·65	3·65	·73	12·65	37·47
Delhi	547	8·05	5·21	9·98	13·33	13·39	10·18	7·34	10·58	12·03	11·85	10·08	4·21	9·59	–	95·43	8·77	2·19	–	1·65	1·10	5·12	4·39	6·76	125·23	250·64
Agra	618	4·68	3·49	3·93	5·32	5·74	4·74	5·05	4·65	5·53	4·94	8·90	8·86	5·57	–	74·92	3·40	2·10	–	·65	4·85	5·66	8·09	2·27	40·94	142·88
Morar	1,582	3·11	4·73	4·26	4·57	4·17	3·04	2·33	3·30	4·67	6·74	7·73	6·25	4·38	–	66·44	2·66	2·85	·06	1·64	1·83	4·68	7·14	4·36	48·04	139·70
Jhansi	1,109	1·67	1·93	2·22	1·99	1·91	1·56	2·06	2·32	3·70	3·28	3·34	2·60	2·38	–	49·59	4·06	1·62	·36	·36	3·07	4·69	7·49	1·80	26·60	99·64
Nowgong	469	5·88	3·20	2·61	1·85	2·51	3·25	3·15	3·54	4·34	6·00	4·25	2·80	3·74	–	43·50	1·92	·85	–	1·49	1·71	7·67	4·90	2·56	35·61	100·21
Lullutpore (11 months)	709	5·89	4·18	5·67	2·77	4·01	4·25	3·53	5·67	6·40	15·16	14·52	–	6·54	–	96·33	5·22	1·83	–	–	1·27	2·82	7·62	2·12	23·41	140·62
Deolee	460	6·10	4·50	4·12	3·88	6·00	4·83	3·70	5·40	8·07	4·61	4·27	5·01	5·05	–	48·04	2·17	8·04	–	–	1·96	6·31	10·00	5·22	64·35	146·09
Umballa	683	1·90	4·60	3·45	5·50	4·99	5·32	3·11	3·09	4·84	3·95	2·63	3·87	3·99	–	33·24	4·69	4·10	·29	·44	6·44	5·12	7·76	4·39	36·90	103·37
Jullundur (9 months)	438	–	–	–	1·26	1·51	1·64	5·56	6·84	7·65	6·99	7·31	6·15	5·77	–	35·85	2·28	2·28	–	·68	1·83	6·85	3·43	5·48	23·97	82·65
Ferozepore	694	2·13	2·13	3·03	3·72	3·03	2·84	2·14	3·12	2·56	2·45	2·27	2·16	2·65	–	29·83	1·44	3·31	·29	–	6·48	4·03	3·75	3·03	33·57	85·73
Umritsur (9 months)	451	–	–	5·10	4·14	3·78	4·77	4·09	4·90	6·02	6·24	–	5·42	4·94	·22	31·93	7·32	7·76	–	·22	4·21	7·32	3·32	4·88	45·68	112·86
Dhurmsalla (11 months)	716	–	2·99	2·25	2·67	2·57	2·88	2·49	2·18	2·80	2·83	2·74	3·20	2·69	–	32·12	1·26	1·96	–	·42	3·91	4·19	4·19	·70	18·99	67·74
Meean Meer	1,288	2·51	6·06	4·40	5·13	2·77	2·64	3·01	3·91	5·10	3·29	3·91	3·08	3·93	–	57·61	2·64	2·10	·15	·39	1·94	5·12	4·74	3·57	46·51	124·77
Mooltan	990	5·40	4·07	4·51	2·66	2·52	5·59	5·08	3·19	15·68	14·69	10·32	6·10	6·74	–	187·07	7·48	2·12	·10	·30	1·72	5·66	2·02	5·05	20·30	231·82
Rawul Pindee	1,391	4·99	5·30	4·03	3·82	6·32	4·02	2·67	2·95	2·99	3·31	3·32	3·40	3·92	–	43·28	4·67	2·80	·58	·72	2·59	6·04	4·67	4·89	40·90	111·14
Peshawur	4,134	5·30	4·67	4·01	3·51	3·20	3·78	3·69	3·80	6·65	8·12	9·99	6·90	5·26	–	150·48	13·18	11·22	·07	·58	3·07	6·44	5·06	3·85	36·55	230·50

* Strength varied throughout the Year from 200 to 600.

2.—NATIVE TROOPS, 1864—*continued.*

TABLE showing the MORTALITY in each STATION, the CAUSES of DEATH, and the Ratio of DEATHS to STRENGTH

STATIONS.	Average Strength during the period of Observation.	CAUSES OF DEATHS IN HOSPITAL																						DEATH RATIO OF AVERAGE STRENGTH.				
		Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurry.	Injury and Accidents.	Wounds and Accidents.	All other Causes.	Died out of Hospital.	Total Deaths of the Year.	By Cholera.	By Fever.	By Bowel Complaints.	By Hospital Gangrene.	By All Causes.
Fort William	349	5		1			1		2		2									1	2			11	14·32	17·21			31·52
Alipore	576	3		2							3				1						2			14	5·21	19·10			24·31
Ballygunge	39	1																						1	25·64				25·64
Barrackpore	1,341	3		1	1	1	1		2		3				1		2	1		1	2	1		12	2·24	14·17			16·41
Berhampore	171			1					1		1													2	1·54				17·54
Dacca (9 months)	584	21			1				1		7										2			32	35·96	18·82			54·78
Chittagong	333			5							1							4		5		1		10		30·03			30·03
Cherrapoonjee	412								1													2		3	7·28				7·28
Cachar (7 months)	168			1																				2		11·90			11·90
Sylhet and Jowai	455	10		1			1		1	1	3				1	1		1				1	1	25	21·97	30·78	2·20		54·95
Gowalparah	188	2																						2	10·64				10·64
Gowhatty	361	2							1						1							1		3	5·54	8·31			13·85
Nowgong (8 months)	139																												
Tezpore (9 months)	210				2																			2		9·52			9·52
Debrooghur	647				2				1								1							4		6·19	1·54		7·73
Bhootan Field Force		3		1																				6	1·56	2	1·04		8·12
Julpigoree	883	1	1	9	1										1		1		1	1				16	1·13	16·99			18·12
Bhaugulpore	465																												
Dorundah	602			5					1															6		9·97			9·97
	7,929	51	1	27	7	1	3	—	11	3	21	—	—	1	10	1	4	3	1	4	2	10	4	105	6·43	13·88	·50		20·81
Dinapore	587	1	—	—	—	—	—	—	—	—	1	—	—	—	1	—	—	1	—	—	—	1	1	4	1·70	8·52	—		10·22
Segowlee	355	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	1	2	—	8·45	2·82		11·27
Benares	551	2	—	2	—	—	—	—	1	1	—	—	—	—	1	—	—	1	—	—	—	—	—	4	3·63	10·89	—		14·52
Goruckpore	630	—	—	1	—	—	—	—	—	—	2	—	—	—	—	—	—	—	1	—	—	1	—	4	1·58	7·91	—		7·94
Fyzabad (7 months)	679	2	4	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	2·65	7·80	—		10·31
Lucknow	1,588	1	—	—	3	—	—	—	—	—	—	—	—	—	1	3	—	—	—	—	—	—	—	5	·63	5·04	·63		6·30
Seetapore (9 months)	478	—	—	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	1	—	3	—	6·27	—		6·27
Cawnpore (10 months)	706	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	1	1	4	—	5·66	—		5·66
Banda	388	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	2	—	5·15	—		5·15
Humeerpore	431	—	1	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	1	4	—	9·28	—		9·28
Nagodee	570	—	—	1	1	—	—	—	—	—	—	—	—	—	1	2	—	—	—	—	—	—	—	5	—	8·77	—		8·77
Allahabad (10 months)	518	2	—	—	2	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	6	3·86	7·72	—		11·58
	6,945	8	5	4	7	—	—	—	4	1	3	2	—	2	11	3	2	2	—	—	4	4	2	64	1·15	7·70	·28		9·23
Shahjehanpore	309	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—		—	—	1	—	3	—	9·71	—		9·71
Bareilly	866	—	—	1	—	1	1	—	—	1	—	—	—	—	2	—	—	—	—	—	—	1	—	7	—	8·08	—		8·08
Roorkee (10 months)	895	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	1	3	—	2·23	1·12		3·35
Almorah (9 months)	524	—	—	2	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	4	—	5·72	1·91		7·63
Deyrah (11 months)	120	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—	8·33	—		8·33
Moradabad (9 months)	391	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	2	—	3	—	7·67			7·67
Meerut	817	—	1	1	2	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1	1	—	7	—	8·57	—		8·57
Allyghur (9 months)	411	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	2·43	—		2·43
Delhi	547	—	—	1	9	—	—	—	—	—	1	—	—	—	4	2	—	—	—	—	—	2	1	20	—	34·73	1·78		36·51
	4,388	—	1	5	11	1	1	—	—	1	1	—	—	1	9	2	3	—	—	—	1	9	3	49	—	10·49	·68		11·17
Agra	618	—	—	2	—	—	1	—	—	—	—	—	—	—	1	1	1	—	—	—	—	—	2	8	—	6·71	3·23		12·94
Morar	1,582	—	—	2	1	1	—	—	—	—	1	—	—	—	5	—	—	—	—	—	—	3	—	13	—	8·22	—		8·22
Jhansi	1,109	—	—	1	1	—	—	—	—	—	1	1	—	—	1	—	—	—	—	—	—	—	—	5	—	4·51	—		4·51
Nowgong	69	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	—	2·13	—		2·13
Lullutpore (11 months)	09	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	2·82	—		2·82
Jubbulpore (10 months)	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1	—	2	—	17·39	—		17·39
Deolee	460	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	3	—	6·52	—		6·52
	4,984	—	—	7	4	1	1	—	—	—	2	1	—	—	8	1	3	—	—	—	—	4	2	34	—	6·42	·40		6·82
Umballa	983	—	—	2	—	—	—	—	3	—	2	—	—	—	1	1	—	—	—	—	—	—	—	9	—	13·17	—		13·17
Jullundur (9 months)	438	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	2	—	4·57	—		4·57
Ferozepore	694	—	—	2	3	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	1	—	8	—	11·53	—		11·53
Umritsur (9 months)	451	1	—	—	2	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	4	2·22	6·65	—		8·87
Dhurmsalla (11 months)	716	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	3	—	4·19	—		4·19
Meean Meer	1,288	—	—	1	—	—	—	—	2	—	3	—	—	—	2	—	—	—	—	—	—	2	—	10	—	7·76	—		7·76
Mooltan	990	—	—	—	2	—	—	—	—	—	—	—	—	—	2	—	3	—	—	—	1	—	—	8	—	8·08	—		8·08
Rawul Pindee	1,391	—	—	3	2	—	—	—	1	—	—	—	—	—	2	—	2	—	—	—	—	1	1	12	—	7·91	·72		8·63
Peshawur	4,134	—	4	22	2	3	—	—	12	—	7	—	—	—	7	—	—	—	—	—	1	4	2	64	—	15·00	·48		15·48
	10,504	1	4	32	11	3	—	—	18	1	12	—	—	—	17	1	7	—	—	—	2	8	3	120	0·9	11·04	·9		11·42
Troops on the March (7 months)	4,114	2	—	9	11	2	—	—	2	1	3	1	—	1	13	1	1	—	—	1	2	4	—	54	·40	12·68	—		13·12
BENGAL PRESIDENCY	87,225	62	11	84	51	8	5	—	35	7	42	4	—	5	68	9	20	5	1	5	11	39	14	486	1·67	11·00	·38		13·05

2.—NATIVE TROOPS, 1864—*continued.*

TABLE showing the prevalence of SMALL-POX and CHOLERA in each Month, and the Distribution of those Epidemics by STATIONS and PROVINCES.

STATIONS.	Average Strength.	SMALL-POX. Number of Admissions into Hospital in each Month.												Total Admissions of the Year.	Deaths of the Year.	Died per 1,000 of Strength.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			
Fort William	349	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Alipore	576	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Ballygunge	39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Barrackpore	1,341	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Berhampore	171	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dacca (9 months)	584	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Chittagong	333	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Cherrapoonjee	412	–	–	–	–	2	–	–	–	–	–	–	–	2	–	
Cachar (7 months)	168	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Sylhet and Jowai	455	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·13
Gowalparah	188	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Gowhatty	361	–	–	–	–	1	–	–	–	–	–	–	–	1	–	
Nowgong Assam (8 months)	139	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Tezpore (9 months)	210	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Debrooghur	647	–	1	–	–	–	–	1	–	–	–	–	–	2	–	
Bhootan Field Force (2 months)	1,922	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Julpigoree	883	1	1	–	–	–	–	–	–	–	–	–	–	2	1	
Bhaugulpore	465	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dorundah	602	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dinapore	587	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Segowlee	355	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Benares	551	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Goruckpore	630	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Fyzabad (7 months)	679	–	–	–	–	–	3	–	–	–	–	–	2	5	4	
Lucknow	1,588	–	–	–	–	5	–	–	2	1	–	–	–	8	–	·72
Seetapore (9 months)	478	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Cawnpore (10 months)	796	–	–	–	1	–	1	–	–	–	–	–	–	2	–	
Banda	383	–	–	–	–	1	1	–	–	–	–	–	–	2	–	
Humeerpore	431	–	–	–	–	1	2	–	–	–	–	–	–	3	1	
Nagode	570	–	–	–	–	1	–	–	–	–	–	–	–	–	–	
Allahabad (10 months)	518	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Shahjehanpore	309	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Bareilly	866	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Roorkee (10 months)	895	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Almorah (9 months)	524	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·23
Deyrah (11 months)	120	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Moradabad (9 months)	391	–	–	–	–	1	–	–	–	–	–	–	–	1	–	
Meerut	817	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Allyghur (9 months)	411	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Delhi	547	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Agra	618	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Morar	1,582	1	2	2	1	–	–	–	–	–	–	–	–	6	–	
Jhansi	1,109	–	–	–	1	–	–	–	–	–	–	–	–	–	–	·00
Nowgong	469	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Lullutpore (11 months)	709	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·00
Jubbulpore (10 months)	115	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Deolee	460	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Umballa	683	–	–	–	2	–	–	–	–	–	–	–	–	2	–	
Jullundur (9 months)	438	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Ferozepore	694	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Umritsur (9 months)	451	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dhurmsalla (11 months)	716	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·38
Meean Meer	1,288	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Mooltan	990	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Rawul Pindee	1,391	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Peshawur	4,134	–	–	–	–	–	–	–	–	–	2	7	–	9	4	
Troops on the March (7 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
BENGAL PRESIDENCY	–	2	4	3	3	12	6	1	2	1	–	2	10	46	11	·80

STATIONS.	CHOLERA. Number of Admissions into Hospital in each Month.												Total Admissions of the Year.	Deaths of the Year.	Died per 1,000 of Strength.
	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			
Fort William	–	–	1	–	11	–	–	–	–	1	2	–	14	5	
Alipore	–	–	–	4	2	–	–	–	–	–	–	1	8	3	
Ballygunge	–	–	–	–	2	–	–	–	–	–	–	–	2	1	
Barrackpore	–	–	1	–	4	–	–	–	1	2	–	–	8	3	
Berhampore	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dacca (9 months)	–	–	–	9	6	9	4	1	1	2	7	1	40	21	
Chittagong	–	–	–	–	–	1	–	–	–	–	–	–	1	–	
Cherrapoonjee	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Cachar (7 months)	–	–	10	1	–	–	1	–	–	–	1	–	13	10	6·43
Sylhet and Jowai	–	–	–	2	1	2	–	–	–	–	–	2	5	2	
Gowalparah	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Gowhatty	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Nowgong Assam (8 months)	–	–	–	–	–	–	–	1	–	1	5	2	8	3	
Tezpore (9 months)	–	–	–	1	5	–	–	–	–	–	–	–	7	3	
Debrooghur	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Bhootan Field Force (2 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Julpigoree	–	–	–	–	1	1	1	4	–	–	–	–	5	1	
Bhaugulpore	–	–	–	1	–	–	–	–	–	–	–	–	1	1	
Dorundah	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dinapore	–	–	–	–	1	1	–	–	–	–	–	–	2	1	
Segowlee	–	–	–	–	–	–	–	1	1	–	–	–	2	1	
Benares	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Goruckpore	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Fyzabad (7 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Lucknow	–	–	–	1	2	1	–	1	1	–	–	–	5	2	1·15
Seetapore (9 months)	–	–	–	–	1	1	–	–	–	–	–	–	2	1	
Cawnpore (10 months)	–	–	–	1	–	–	–	–	–	–	–	–	1	1	
Banda	–	–	–	1	–	1	–	–	–	–	–	–	2	1	
Humeerpore	–	–	–	1	–	–	–	–	–	–	–	–	1	1	
Nagode	–	–	–	1	–	1	–	–	–	–	–	–	2	2	
Allahabad (10 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Shahjehanpore	–	–	–	–	2	–	–	–	–	–	–	–	2	1	
Bareilly	–	–	–	2	–	–	–	–	–	–	–	–	–	–	
Roorkee (10 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Almorah (9 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Deyrah (11 months)	–	–	–	–	–	–	–	–	1	–	–	–	1	–	·00
Moradabad (9 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Meerut	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Allyghur (9 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Delhi	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Agra	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Morar	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Jhansi	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·00
Nowgong	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Lullutpore (11 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·00
Jubbulpore (10 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Deolee	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Umballa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Jullundur (9 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Ferozepore	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Umritsur (9 months)	–	–	–	–	–	–	–	–	–	–	1	–	1	1	
Dhurmsalla (11 months)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Meean Meer	–	–	–	–	–	–	–	–	–	–	–	–	–	–	·09
Mooltan	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Rawul Pindee	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Peshawur	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Troops on the March (7 months)	–	–	3	2	–	–	–	–	–	3	1	–	9	2	
BENGAL PRESIDENCY	–	–	12	26	39	16	6	6	4	9	16	7	141	62	1·67

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864.

TABLE showing the SICKNESS and MORTALITY among the GAOL POPULATION of the *Bengal* Presidency during the Year 1864, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Number Daily Sick per Cent. of Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fevers.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.
January	52,277	2,358	4·51	399	—	3	1	120	5	89	81	1	—	22	1	15	1	2	25	2	28
February	52,278	2,306	4·41	338	—	20	3	152	1	41	37	1	4	13	—	8	8	2	19	3	26
March	51,984	2,493	4·79	382	—	53	2	175	2	67	32	—	2	18	3	3	5	—	6	1	20
April	51,972	2,592	4·99	496	—	151	2	214	2	48	33	—	—	10	—	6	5	—	6	3	16
May	52,196	2,115	4·05	282	—	58	—	107	—	39	23	1	4	11	1	6	1	—	9	1	18
June	52,270	1,982	3·79	282	—	81	1	62	11	41	36	3	1	7	—	8	6	—	7	3	12
July	52,873	1,849	3·50	172	—	23	—	30	2	38	22	1	1	7	—	13	1	—	10	—	21
August	53,132	1,997	3·76	223	—	34	—	26	1	55	44	1	2	11	—	13	5	2	9	1	19
September	53,309	2,160	4·05	269	—	1	1	68	—	75	67	—	1	7	—	4	3	—	16	7	19
October	53,196	2,306	4·33	286	—	3	—	70	3	63	81	1	4	19	3	5	5	—	11	—	18
November	53,035	2,001	3·77	269	—	14	—	61	3	62	67	—	—	12	2	5	3	—	11	4	22
December	52,657	1,840	3·50	263	—	6	—	75	3	58	72	1	2	12	1	4	—	—	12	—	17
						450	10	1,163	33	669	595	10	21	149	11	90	52	6	141	25	236
						Died per 1,000 of Average Strength.															
For the Year	52,598	2,167	4·12	3,661	69·60	8·56	·19	22·11	·63	12·72	11·31	·19	·40	2·83	·21	1·71	·99	·11	2·68	·48	4·48

Died out of Hospital, 31. Per 1,000 of Average Strength, ·59.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	6	53	175	382	155	234	52	88	11	12	25	13	1,206	2·29	37·31
Small-pox*	29	258	106	38	35	18	5	3	1	5	29	48	575	1·09	1·74
Fevers	2,121	2,170	2,666	2,453	2,034	1,740	1,745	2,225	2,672	3,079	2,286	1,859	27,050	51·43	4·30
Apoplexy	7	3	3	3	1	12	4	1	2	3	2	4	45	·09	73·33
Delirium Tremens	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dysentery and Diarrhœa	809	649	880	1,157	1,007	923	970	1,323	1,198	1,075	939	725	11,655	22·16	10·85
Hepatitis	8	6	2	4	5	5	10	9	6	5	7	7	74	·14	13·51
Spleen Disease	37	33	27	22	28	25	16	20	25	25	32	35	325	·62	6·46
Respiratory Diseases	167	173	141	115	123	131	99	112	108	134	132	167	1,602	3·05	9·30
Phthisis Pulmonalis	18	14	17	13	15	22	12	17	9	7	3	5	152	·29	59·21
Dropsy	25	25	17	12	15	15	14	11	11	9	15	20	189	·36	27·51
Atrophy and Anæmia	97	63	36	40	51	35	38	41	47	43	38	33	562	1·07	25·10
Scurvy	12	7	12	15	25	7	18	10	11	22	9	10	158	·30	3·80
Rheumatism	119	121	117	132	114	125	127	131	141	103	120	127	1,477	2·81	
Venereal Diseases	108	82	106	87	87	106	103	95	96	80	69	82	1,101	2·09	
Eye Diseases	39	51	58	94	124	133	139	110	72	114	99	16	1,079	2·05	1·29
Abscess and Ulcer	583	636	648	563	625	641	776	705	672	620	480	437	7,386	14·01	
Wounds and Accidents	110	152	186	190	203	185	190	183	158	147	146	118	1,958	3·72	
All other Causes	694	731	864	759	692	686	655	681	599	555	511	541	7,958	15·13	
	4,989	5,227	6,061	6,069	5,329	5,043	4,973	5,765	5,939	6,038	4,942	4,277	64·552		
	Admitted per Cent. of Average Strength in each Month.														
	9·54	10·00	11·66	11·68	10·21	9·65	9·41	10·85	10·95	11·35	9·32	8·12	122·73		

* It has not been considered expedient to introduce in this series, the Table showing the prevalence of small-pox in 1864 in each of the gaols of the Presidency. Although true small-pox appeared widely as an epidemic in nearly every Province, the deaths among the gaol population were limited to six gaols;—the Patna, Benares, Mirzapore, and Nursingpore Gaols, which afforded each a fatal case. The Mymensing Gaol, which had two deaths, and the Dacca Gaol, which had four deaths from small-pox: these 10 deaths represent the total mortality for the year. Of the 575 cases noted as Variola, 520 occurred in the gaols of Bengal Proper; but, although returned as Variola, the disease appears to have been a mild Varioloid, and the ratio of deaths to admissions is, therefore, an untrue ratio for genuine small-pox. Many cases of Varicella are recorded in the same gaols, while other gaols of the Province appear to have been attacked by Varicella only; 383 cases were returned as Varicella, with no casuality.

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the GAOL POPULATION in Lower *Bengal* and in *Assam* during the Year 1864, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Number Daily Sick per Cent. of Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy and Anœmia.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anœmia.	Wounds and Accidents.	All other Causes.
January	14,859	790	5·32	115	—	3	1	3	1	2	2	52	13	1	—	11	—	12	4	—	4	—	6
February	14,806	816	5·51	81	—	17	2	5	3	—	—	22	4	1	1	7	—	7	5	—	5	—	2
March	14,620	835	5·71	104	—	45	2	1	1	1	1	27	8	—	—	4	2	1	5	—	3	1	2
April	14,704	821	5·58	170	—	115	1	2	6	—	1	19	6	—	—	3	—	4	5	—	3	—	5
May	14,445	712	4·93	78	—	33	—	1	—	1	—	19	4	1	2	4	1	3	3	—	3	—	3
June	14,506	724	4·99	56	—	10	—	—	—	—	—	20	7	1	—	4	—	5	5	—	2	1	1
July	14,441	725	5·02	55	—	6	—	1	3	1	1	17	7	1	—	—	—	5	4	—	4	—	5
August	14,506	732	5·05	60	—	2	—	1	3	—	1	24	8	1	1	6	—	4	4	—	1	—	4
September	14,426	721	4·99	55	—	—	—	1	5	1	—	24	6	—	—	3	—	1	3	—	5	2	4
October	14,159	723	5·11	65	—	—	—	3	3	—	1	32	8	1	2	3	2	3	5	—	1	—	1
November	13,888	717	5·16	68	—	13	—	2	2	—	2	26	4	—	—	1	1	2	2	—	6	2	5
December	13,934	678	4·87	52	—	6	—	—	1	—	—	24	9	—	1	1	1	3	—	—	4	—	2
						250	6	20	28	6	9	306	84	7	7	47	7	50	45	—	41	6	40
						Died per 1,000 of Average Strength.																	
For the Year	14,441	750	5·19	959	66·41	17·31	·42	1·39	1·94	·42	·62	21·19	5·82	·48	·48	3·25	·48	3·46	3·12	—	2·84	·42	2·77

Died out of Hospital, 10. Per 1,000 of Average Strength, ·69.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	6	47	140	265	81	36	19	11	6	8	24	12	655	4·54	38·17
Small-pox	23	251	96	35	28	10	4	3	—	2	25	43	520	3·60	11·5
Fever, Intermittent	578	475	611	587	592	570	720	830	724	824	697	614	7,822	54·16	2·26
„ Remittent	38	42	59	44	50	55	39	60	82	76	71	34	650	4·50	5·23
„ Continued															
Apoplexy	2	—	1	—	1	—	2	1	1	—	1	1	10	·07	90·00
Delirium Tremens	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dysentery and Diarrhœa	329	273	470	651	533	458	448	495	425	431	394	293	5,200	36·01	7·50
Hepatitis	6	3	1	2	3	3	5	5	3	3	1	6	41	·28	17·07
Spleen Disease	20	16	17	13	19	11	10	14	17	14	17	23	191	1·32	3·66
Respiratory Diseases	79	78	74	53	59	60	58	63	57	48	66	65	760	5·26	6·18
Phthisis Pulmonalis	11	9	10	6	8	10	4	8	5	2	1	2	76	·53	65·79
Dropsy	19	23	13	10	14	10	9	9	11	8	11	17	154	1·07	29·22
Atrophy and Anœmia	22	14	15	17	21	12	19	16	20	14	11	16	197	1·36	20·81
Scurvy	8	6	7	6	3	—	3	4	2	6	1	3	49	·34	—
Rheumatism	54	58	54	70	66	60	66	63	68	48	55	61	723	5·01	
Venereal Diseases	35	36	36	33	25	44	35	32	33	23	17	25	374	2·59	
Eye Diseases	11	16	27	14	11	16	23	20	10	27	27	23	225	1·56	·72
Abscess and Ulcer	147	176	179	147	159	179	147	172	189	181	144	98	1,918	13·28	
Wounds and Accidents	35	57	52	59	74	49	52	45	49	48	47	38	605	4·19	
All other Causes	287	307	409	356	273	310	281	269	246	227	233	261	3,459	23·95	
	1,710	1,887	2,271	2,368	2,020	1,893	1,944	2,120	1,948	1,990	1,843	1,635	23,629		
Admitted per Cent. of Average Strength in each Month.	11·51	12 74	15·53	16·11	13·98	13·05	13·46	14·61	13·50	14·05	13·27	11·73	163·62		

Sub-Divisions in charge of Native Doctors not included.

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the GAOL POPULATION in the *Dinapore, Benares, Oude,* and *Cawnpore* Districts during the Year 1864, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Daily Sick per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.
January	14,972	471	3·15	93		–	–	2	4	–	2	22	44	–	–	–	–	2	–	1	7	1	8
February	15,105	416	2·75	60		3	–	1	10	–	1	7	20	–	1	2	–	1	2	–	1	2	10
March	15,199	465	3·06	61		1	–	3	12	2	1	16	17	–	1	4	–	2	–	–	–	–	2
April	15,573	465	2·98	106		28	1	3	27	1	–	17	20	–	–	2	–	1	–	–	–	–	6
May	15,623	492	3·15	85		20	–	6	16	–	–	10	13	–	2	4	–	3	–	–	3	–	8
June	15,555	489	3·14	107		47	1	3	2	5	6	13	19	1	1	1	–	3	1	–	1	–	3
July	15,694	467	2·97	56		9	–	4	5	2	–	16	7	–	1	1	–	4	–	–	2	–	5
August	15,577	579	3·72	99		26	–	1	4	–	–	20	31	–	1	2	–	6	–	1	–	1	6
September	15,383	550	3·58	103		–	1	4	5	–	–	40	40	–	1	1	–	1	–	–	2	–	8
October	15,523	512	3·29	102		1	–	3	5	–	2	21	51	–	1	7	–	1	–	–	3	–	7
November	15,665	448	2·86	80		1	–	4	1	2	–	22	35	–	–	2	–	2	1	–	–	1	9
December	15,534	389	2·59	85		–	–	9	1	–	1	21	38	–	1	4	–	1	–	–	–	–	9
						136	3	43	92	12	12	225	335	1	10	30	–	27	4	2	19	5	81
						Died per 1,000 of Average Strength.																	
For the Year	15·450	479	3·10	1,037	67·12	8·80	·19	2·78	5·96	·78	·78	14·56	21·68	·07	·65	1·94	–	1·75	·26	·13	1·23	·32	5·24

Deaths out of Hospital, 7. Died per 1,000 of Average Strength, ·45.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	6	10	101	56	148	15	53	2	1	1	1	394	2·55	31·52
Small-pox	6	5	4	3	7	5	–	–	1	–	2	–	33	·21	9·09
Fever, Intermittent	217	229	285	352	310	293	282	375	384	444	346	252	3,769	24·40	1·14
„ Remittent	50	72	122	134	76	49	45	47	53	36	14	19	717	4·64	14·50
„ Continued															
Apoplexy	2	–	1	2	–	6	–	–	1	3	–	1	16	·10	75·00
Delirium Tremens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dysentery and Diarrhœa	284	216	244	302	274	249	271	526	426	350	267	238	3,647	23·60	15·36
Hepatitis	–	1	–	–	1	1	1	–	2	1	–	–	7	·04	14·28
Spleen Disease	12	2	6	5	4	7	5	2	1	2	2	2	50	·32	20·00
Respiratory Diseases	19	21	14	14	13	14	16	17	16	41	23	33	241	1·56	12·45
Phthisis Pulmonalis	4	3	6	5	6	11	4	3	1	3	1	1	48	·31	56·25
Dropsy	3	1	1	–	1	3	1	1	–	–	1	3	15	·10	26·67
Atrophy and Anæmia	43	19	6	5	11	8	5	7	4	2	4	2	116	·75	16·38
Scurvy	1	–	–	–	–	2	2	2	4	2	1	2	16	·10	12·50
Rheumatism	22	19	28	27	12	32	21	32	17	20	19	27	276	1·79	
Venereal Diseases	34	15	27	20	19	22	34	26	21	25	15	18	276	1·79	
Eye Diseases	9	20	14	41	65	75	70	50	25	35	34	6	444	2·89	
Abscess and Ulcer	135	174	211	174	193	180	245	200	163	146	116	119	2,056	13·31	1·62
Wounds and Accidents	27	38	55	61	70	63	55	75	29	43	43	32	591	3·82	
All other Causes	152	189	204	182	156	142	116	148	115	96	79	80	1,659	10·74	
	1,020	1,030	1,238	1,428	1,274	1,310	1,188	1,564	1,265	1,250	968	836	14,371		
	Admitted per Cent. of Average Strength in each Month.														
	6·81	6·82	8·14	9·17	8·16	8·42	7·57	10·04	8·22	8·05	6·18	5·38	93·02		

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864 - *continued.*

TABLE showing the SICKNESS and MORTALITY among the GAOL POPULATION in *Nagpore* and *Central India* during the Year 1864, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Number Daily Sick per Cent. of Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.
January	5,386	261	4·85	54	1	1	–	9	20	–	–	8	11	–	–	2	–	–	–	1	–	–	3
February	5,342	229	4·29	17	–	–	1	2	5	–	–	2	5	–	–	1	–	–	–	–	–	1	1
March	5,420	228	4·21	17	–	7	–	3	1	–	–	–	1	–	1	3	–	–	–	–	1	–	1
April	5,444	233	4·28	19	–	7	–	3	3	–	–	5	1	–	–	1	–	–	–	–	1	–	1
May	5,501	203	3·69	14	–	5	–	2	1	–	–	4	–	–	–	1	–	–	–	–	1	–	2
June	5,479	217	3·96	34	1	27	–	1	1	–	–	3	2	–	–	–	–	–	–	–	1	–	–
July	5,431	231	4·25	23	1	8	–	1	1	–	–	2	5	–	–	2	–	1	–	–	2	–	2
August	5,536	246	4·44	20	1	6	–	1	2	–	–	4	4	–	–	1	–	–	–	–	–	–	2
September	5,461	299	5·48	19	1	1	–	1	1	–	–	7	8	–	–	–	–	1	–	–	1	–	–
October	5,550	370	6·67	18	1	2	–	1	2	–	–	3	5	–	–	4	–	–	–	–	–	–	1
November	5,503	316	5·74	28	2	–	–	2	–	–	–	8	11	–	–	3	–	–	–	–	2	–	2
December	5,331	279	5·23	17	1	–	–	1	1	–	–	3	8	–	–	2	–	–	–	–	2	–	–
						63	1	21	36	–	–	49	61	–	1	18	–	2	–	1	11	1	15
						Died per 1,000 of Average Strength.																	
For the Year	5,448	259	4·75	280	51·39	11·56	·18	3·85	6·61	–	–	9·00	11·20	–	·18	3·31	–	·36	–	·18	2·02	·18	2·76

Deaths out of Hospital, 2. Died per 1,000 of Average Strength, ·37.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	25	15	18	50	18	23	3	3	–	–	155	2·85	40·64
Small-pox	–	1	–	–	–	3	1	–	–	2	–	2	9	·17	11·11
Fever, Intermittent	159	144	135	195	155	166	177	231	337	482	311	217	2,709	49·72	·77
„ Remittent	58	11	9	9	8	17	10	13	15	22	5	13	190	3·49	18·95
„ Continued															
Apoplexy	1	1	–	–	–	–	–	–	–	–	–	–	2	·04	–
Delirium Tremens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dysentery and Diarrhœa	54	37	60	70	62	78	103	125	127	94	104	65	979	17·97	11·24
Hepatitis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Spleen Disease	3	3	2	2	1	1	–	1	3	3	2	2	23	·42	4·35
Respiratory Diseases	20	20	14	21	19	21	9	13	8	17	10	18	190	3·49	9·47
Phthisis Pulmonalis	1	–	–	–	1	1	–	1	1	1	–	–	6	·11	33·33
Dropsy	–	–	–	–	–	–	3	1	–	1	1	–	6	·11	–
Atrophy and Anœmia	3	5	2	4	4	1	2	4	2	9	5	7	48	·88	22·92
Scurvy	–	–	–	–	1	1	3	–	–	2	3	–	10	·18	10·00
Rheumatism	18	19	15	17	11	8	8	8	18	12	16	10	160	2·94	
Venereal Diseases	16	12	13	11	12	9	9	8	14	7	10	7	128	2·34	
Eye Diseases	3	6	9	9	12	5	12	6	9	10	8	3	92	1·69	·56
Abscess and Ulcer	91	94	109	87	86	91	120	121	152	144	97	96	1,288	23·64	
Wounds and Accidents	11	23	10	14	26	25	13	17	12	22	16	12	201	3·69	
All other Causes	98	79	98	87	84	76	73	78	64	81	80	77	975	17·90	
	536	455	501	541	500	553	561	650	765	912	668	529	7,171		
	Admitted per Cent. of Average Strength in each Month.														
	9·96	8·52	9·25	9·94	9·09	10·09	10·33	11·74	14·01	16·43	12·14	9·92	131·63		

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the GAOL POPULATION in the *Agra, Meerut,* and *Rohilkund* Districts during the Year 1864, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Number Daily Sick per Cent. of Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anœmia.	Wounds and Accidents.	All other Causes.
January	7,573	181	2·39	36		–	–	–	8	9	–	–	6	–	–	6	–	1	–	–	2	–	4
February	7,550	246	3·26	64		–	–	–	14	32	–	–	4	–	–	1	–	–	–	–	4	–	9
March	7,628	424	5·56	91		–	–	3	23	52	–	3	2	–	–	2	–	–	–	–	1	–	5
April	7,121	598	8·40	153		–	–	–	38	102	1	4	1	–	–	–	–	1	–	–	1	2	3
May	7,479	325	4·35	58		–	–	–	16	31	–	3	1	–	–	3	–	–	1	–	1	–	2
June	7,279	214	2·94	54		–	–	2	14	21	2	3	5	1	–	1	–	–	–	–	1	–	4
July	7,681	173	2·25	15		–	–	2	4	1	–	1	1	–	–	1	–	–	–	–	1	–	4
August	7,878	179	2·27	28		–	–	1	–	3	–	6	–	–	–	2	–	–	1	1	7	–	7
September	7,867	220	2·79	15		–	–	–	–	3	–	4	2	–	–	–	–	1	–	–	1	3	1
October	7,901	189	2·39	25		–	–	–	2	–	–	5	4	–	–	2	–	–	–	–	4	–	8
November	7,884	153	1·94	16		–	–	–	3	1	–	2	4	–	–	2	1	–	–	–	–	–	3
December	7,838	165	2·11	9		–	–	–	2	–	–	1	3	–	–	–	–	–	–	–	1	–	2
						–	–	8	124	255	3	32	33	1	–	20	1	3	2	1	24	5	52
						Died per 1,000 of Average Strength.																	
For the Year	7,641	257	3·36	564	73·81	–	–	1·05	16·23	33·37	·39	4·19	4·32	·13	–	2·62	·13	·39	·26	·13	3·14	·66	6·80

Deaths out of Hospital, 7. Died per 1,000 of Average Strength, ·92.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	–	–	–	–	–	1	–	–	–	–	1	·01	–
Small-pox	–	1	5	–	–	–	–	–	–	1	–	–	7	·09	–
Fever, Intermittent	128	96	58	95	136	152	148	181	227	185	143	97	1,646	21·54	·49
„ Remittent	130	303	660	560	243	85	62	53	76	28	37	32	2,269	29·69	16·70
„ Continued															
Apoplexy	–	–	1	1	–	3	–	–	–	–	–	–	5	·07	60·00
Delirium Tremens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dysentery and Diarrhœa	48	21	36	46	57	72	56	84	108	79	35	42	684	8·95	9·51
Hepatitis	–	–	–	–	–	1	1	2	1	–	–	–	5	·07	20·00
Spleen Disease	–	1	–	–	1	–	–	1	–	1	1	–	5	·07	–
Respiratory Diseases	16	19	18	2	13	15	9	14	5	10	20	19	160	2·10	12·50
Phthisis Pulmonalis	1	2	1	1	–	–	–	1	–	–	1	1	8	·10	37·50
Dropsy	–	1	–	2	–	1	1	–	–	–	1	–	6	·08	33·33
Atrophy and Anœmia	8	8	3	3	5	6	8	9	6	8	2	–	66	·86	36·36
Scurvy	–	–	–	–	–	–	1	2	–	–	–	–	3	·04	33·33
Rheumatism	9	12	12	11	12	11	12	11	11	11	12	13	137	1·79	
Venereal Diseases	13	9	12	12	10	13	16	13	16	9	16	13	152	1·99	
Eye Diseases	8	6	4	9	14	14	19	11	10	14	11	7	127	1·66	2·28
Abscess and Ulcer	105	94	73	69	95	85	158	106	89	65	64	56	1,059	13·86	
Wounds and Accidents	25	19	35	24	14	28	46	30	42	24	25	22	334	4·37	
All other Causes	57	65	79	61	66	63	75	66	56	41	42	61	732	9·58	
	548	657	997	896	666	549	612	585	647	476	410	363	7,406		
	Admitted per Cent. of Average Strength in each Month.														
	7·24	8·70	13·07	12·58	8·91	7·54	7·97	7·43	8·22	6·02	5·20	4·63	96·92		

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the SICKNESS and MORTALITY among the GAOL POPULATION in the *Punjab* during the Year 1864, and the Prevalence of the Principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average Number Daily Sick.	Number Daily Sick per Cent. of Strength.	Number of Deaths.	Died per 1,000 of Average Strength.	CAUSES OF DEATHS IN HOSPITAL. Cholera.	Small-pox.	Fever.*	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anœmia.	Wounds and Accidents.	All other Causes.
January	9,493	655	6·90	101		–	–	62	1	7	7	–	–	3	1	–	–	–	12	1	7
February	9,475	599	6·32	116		–	–	80	1	10	4	–	2	3	–	–	1	2	9	–	4
March	9,117	541	5·93	109		–	–	74	–	14	4	–	–	5	1	–	–	–	1	–	10
April	9,130	475	5·20	48		1	–	32	–	3	5	–	–	4	–	–	–	–	1	1	1
May	9,148	383	4·19	47		–	–	34	–	3	5	–	–	–	–	–	–	–	1	1	3
June	9,451	338	3·58	31		–	–	14	3	2	3	–	–	1	–	–	–	–	2	2	4
July	9,626	253	2·63	23		–	–	6	1	2	2	–	–	3	–	3	–	–	1	–	5
August	9,735	261	2·68	16		–	–	10	–	1	1	–	–	–	–	3	–	–	1	–	–
September	10,172	370	3·64	77		–	–	48	–	–	11	–	–	3	–	–	–	–	7	2	6
October	10,063	512	5·09	76		–	–	51	–	2	13	–	1	3	1	1	–	–	3	–	1
November	10,095	367	3·64	77		–	–	47	1	4	13	–	–	4	–	1	–	–	3	1	3
December	10,020	329	3·28	100		–	–	60	2	9	14	1	–	5	–	–	–	–	5	–	4
						1	–	518	9	57	82	1	3	34	3	8	1	2	46	8	48
						Died per 1,000 of Average Strength.															
For the Year	9,630	424	4·40	821	85·25	·10	–	53·80	·94	5·92	8·52	·10	·31	3·53	·31	·83	·10	·20	4·78	·83	4·98

Deaths out of Hospital, 5. Died per 1,000 of Average Strength, ·52.

DISEASES.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	* Total Admissions during the Year.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.
Cholera	–	–	–	1	–	–	–	–	–	–	–	–	1	·01	–
Small-pox	–	–	1	–	–	–	–	–	–	–	2	3	6	·06	–
Fevers	763	798	727	477	464	353	262	435	774	982	662	581	7,278	75·58	7·12
Apoplexy	2	2	–	–	–	3	2	–	–	–	1	2	12	·12	75·00
Delirium Tremens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dysentery and Diarrhœa	94	102	70	88	81	66	92	93	112	121	139	87	1,145	11·89	12·14
Hepatitis	2	2	1	2	1	–	3	2	–	1	6	1	21	·22	4·76
Spleen Disease	2	11	2	2	3	6	1	2	4	5	10	8	56	·58	5·36
Respiratory Diseases	33	35	21	25	19	21	7	5	22	18	13	32	251	2·61	13·54
Phthisis Pulmonalis	1	–	–	1	–	–	4	4	2	1	–	1	14	·15	57·14
Dropsy	3	–	3	–	–	1	–	–	–	–	1	–	8	·08	12·50
Atrophy and Anœmia	21	17	10	11	10	8	4	5	15	10	16	8	135	1·40	34·07
Scurvy	3	1	5	9	21	4	9	2	5	12	4	5	80	·83	2·50
Rheumatism	16	13	8	7	13	14	20	17	27	12	18	16	181	1·88	
Venereal Diseases	10	10	18	11	21	18	9	16	12	16	11	19	171	1·77	
Eye Diseases	8	3	4	21	22	23	15	23	18	28	19	7	191	1·98	1·95
Abscess and Ulcer	105	98	76	86	92	106	106	106	79	84	59	68	1,065	11·06	
Wounds and Accidents	12	15	34	22	19	20	24	16	26	10	15	14	227	2·36	
All other Causes	100	91	74	73	103	95	110	120	118	110	77	62	1,133	11·77	
	1,175	1,198	1,054	836	869	738	668	846	1,214	1,410	1,053	914	11,975		
	Admitted per Cent. of Average Strength in each Month.														
	12·38	12·64	11·56	9·16	9·50	7·81	6 94	8·78	11·94	14·64	10·94	9·49	124·35		

* The Deaths returned under the headings "Intermittent and Remittent Fever," were in reality, almost without exception, caused by Gaol Typhus. It has been found impossible to separate even this disease from the general class of fevers, and the ratio must, therefore, simply be regarded as influenced by the prevalence of Gaol Fever, and not as significant of a death-rate applicable either to one variety of fever or another.

COMPARATIVE STATEMENT of the Ratios of SICKNESS and MORTALITY among the GAOL POPULATION in the various Provinces of the *Bengal* Presidency, for the Year 1864.

DISEASES.	BENGAL PROPER, AND ASSAM. Average Strength - 14,441. Daily Sick per Cent. of Strength - 5·19. Admitted per Cent. of Strength - 163·62. Died per 1,000 of Strength— A. Cholera - 17·31. B. All Causes - 67·10			DINAPORE, BENARES, OUDE, AND CAWNPORE DISTRICTS. Average Strength - 15,450. Daily Sick per Cent. of Strength - 3·10. Admitted per Cent. of Strength - 93·02. Died per 1,000 of Strength— A. Cholera - 8·80. B. All Causes - 67·57			NAGPORE AND CENTRAL INDIA. Average Strength - 5,448. Daily Sick per Cent. of Strength - 4·75. Admitted per Cent. of Strength - 131·63. Died per 1,000 of Strength— A. Cholera - 11·56. B. All Causes - 51·76			AGRA, MEERUT, AND ROHILKUND DISTRICTS. Average Strength - 7,641. Daily Sick per Cent. of Strength - 3·36. Admitted per Cent. of Strength - 96·92. Died per 1,000 of Strength— A. Cholera - —. B. All Causes - 74·73			PUNJAB. Average Strength - 9,630. Daily Sick per Cent. of Strength - 4·10. Admitted per Cent. of Strength - 124·35. Died per 1,000 of Strength— A. Cholera - ·10. B. All Causes - 85·77			BENGAL PRESIDENCY. Average Strength - 52,598. Daily Sick per Cent. of Strength - 4·12. Admitted per Cent. of Strength - 122·73. Died per 1,000 of Strength— A. Cholera - 8·56. B. All Causes - 70·19		
	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.	Admitted per Cent. of Average Strength.	Died per Cent. of Admissions.	Died per 1,000 of Average Strength.
Cholera	4·54	38·17	17·31	2·55	34·52	8·80	2·85	40·64	11·56	·01	–	–	·01	–	·10	2·29	37·31	8·56
Small-pox	3·60	1·15	·42	·21	9·09	·19	·17	11·11	·18	·09	–	–	·06	–	–	1·09	1·74	·19
Fevers*	58·66	·64	3·75	29·04	3·28	9·52	53·21	1·97	10·46	51·23	9·88	50·65	75·58	7·12	53·80	51·43	4·30	22·11
Dysentery and Diarrhœa	36·01	7·50	27·01	23·60	15·36	36·24	17·97	11·24	20·20	8·95	9·51	8·51	11·89	12·14	14·44	22·16	10·85	24·03
Hepatitis	·28	17·07	·48	·04	14·28	·07	–	–	–	·07	20·00	·13	·22	4·76	·10	·14	13·51	·19
Spleen Disease	1·32	3·66	·48	·32	20·00	·65	·42	4·35	·18	·07	–	–	·58	5·36	·31	·62	6·46	·40
Ophthalmia	1·56	–	–	2·89	–	–	1·69	–	–	1·66	–	–	1·98	–	–	2·05	–	–
Rheumatism	5·01	–	–	1·79	–	–	2·94	–	–	1·79	–	–	1·88	–	–	2·81	–	–
Scurvy	·34	–	–	·10	12·50	·13	·18	10·00	·18	·04	33·33	·13	·83	2·50	·20	·30	3·80	·11
Dropsy	1·07	29·22	3·12	·10	26·67	·26	·11	–	–	·08	33·33	·26	·08	12·50	·10	·36	27·51	·99
Atrophy and Anœmia	1·36	20·81	2·84	·75	16·38	1·23	·88	22·92	2·02	·86	36·36	3·14	1·40	34·07	4·78	1·07	25·10	2·68
Phthisis Pulmonalis	·53	65·79	3·46	·31	56·25	1·75	·11	33·33	·36	·10	37·50	·39	·15	57·14	·83	·29	59·21	1·71
Apoplexy	·07	90·00	·62	·10	75·00	·78	·04	–	–	·07	60·00	·39	·12	75·00	·94	·09	73·33	·63
Respiratory Diseases	5·26	6·18	3·25	1·56	12·45	1·94	3·49	9·47	3·31	2·10	12·50	2·62	2·61	13·54	3·53	3·05	9·30	2·83
Venereal Diseases	2·59	–	–	1·79	–	–	2·34	–	–	1·99	–	–	1·77	–	–	2·09	–	–
Abscess and Ulcer	13·28	–	–	13·31	–	–	23·64	–	–	13·86	–	–	11·06	–	–	14·04	–	–
Injury	4·19	–	·42	3·82	–	·32	3·69	–	·18	4·37	–	·66	2·36	–	·83	3·72	–	·48
All other Causes	23·95	–	3·25	10·74	–	5·24	17·90	–	2·76	9·58	–	6·93	11·77	–	5·29	15·13	–	4·69
Died out of Hospital	–	–	·69	–	–	·45	–	–	·37	–	–	·92	–	–	·52	–	–	·59
	163·62	–	67·10	93·02	–	67·57	131·63	–	51·76	96·92	–	74·73	124·35	–	85·77	122·73	–	70·19

* Gaol Fever in the Raipore, Cawnpore, Futtehghur, Agra, Delhi, Umballa, Umritsur, Lahore, Goojranwalla, Mooltan, and Rawul Pindee Gaols. The casualties from this disease may be estimated at nearly 1,200, or a third of the total mortality of the year, if the deaths from sequelae of the fever be taken into account.

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the general Statistics of SICKNESS and MORTALITY in the GAOLS of the *Bengal* Presidency, and the Average Number Daily Sick per Cent. of Strength in each Month.

STATIONS.	Average Strength for the Year.	DAILY SICK PER CENT. OF AVERAGE STRENGTH IN EACH MONTH.												Daily Sick per Cent. of Average Strength for the Year.	Admitted per Cent. of Average Strength.	DIED PER 1,000 OF AVERAGE STRENGTH.		
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.			A. Cholera.	B. Sudden Deaths out of Hospital.	C. All Causes.
Alipore	1,793	5·20	4·32	4·71	4·35	4·09	4·27	5·34	6·14	5·27	5·46	6·12	4·67	4·96	172·11	9·48	–	63·02
Baraset	139	6·02	7·10	7·05	5·33	5·29	3·39	3·66	6·02	9·73	12·36	10·84	10·53	6·47	217·99	–	–	64·75
Jessore	489	5·35	6·03	6·75	9·20	5·26	4·86	4·09	2·54	1·89	2·99	4·45	4·18	4·91	154·39	44·99	2·04	75·66
Kishnaghur	363	2·59	3·11	2·60	4·18	3·74	2·60	2·94	3·17	3·36	4·14	4·08	4·14	3·34	78·79	8·26	–	38·57
Moorshedabad	186	9·57	10·41	9·19	10·31	7·38	6·86	6·37	5·08	6·03	6·17	6·02	6·63	7·51	132·80	–	5·38	91·40
Howrah	127	6·69	5·10	6·41	4·42	4·57	2·36	5·86	5·36	4·89	4·49	5·00	5·50	5·12	81·10	7·87	–	47·24
Hooghly	451	5·20	5·92	4·97	5·72	5·57	5·71	5·02	6·80	6·74	6·27	5·85	4·80	5·72	237·47	15·52	–	77·01
Burdwan	411	5·34	4·84	7·29	7·20	6·26	6·37	6·78	6·80	5·95	5·05	4·88	4·07	5·80	189·54	9·73	2·43	55·96
Bancoorah	395	2·98	11·12	7·23	1·96	·98	1·75	1·38	1·41	1·73	1·64	1·40	1·04	2·78	113·92	40·51	–	68·35
Purulea	183	2·88	4·12	5·95	3·48	2·90	3·46	3·84	2·92	2·29	2·90	2·14	·93	3·15	105·46	–	–	38·25
Sooree	285	3·02	2·98	3·20	4·04	4·49	4·13	4·35	3·34	3·21	3·88	3·70	2·17	3·52	98·59	–	3·51	28·07
Deogurh	89	4·41	1·95	2·62	4·76	2·30	3·19	4·69	5·72	3·33	13·04	6·38	7·41	3·93	115·73	–	–	11·24
Rajmehal	169	4·05	3·90	3·69	5·81	7·38	4·61	4·11	2·85	2·78	3·18	2·57	2·59	3·99	167·45	82·84	–	94·67
Malda	72	2·73	4·66	4·83	4·22	4·04	5·61	2·26	6·29	14·18	13·97	7·73	7·00	6·14	133·33	–	–	13·89
Dinagepore	462	8·56	9·58	6·10	6·51	5·38	3·25	3·18	4·17	4·03	4·04	4·87	4·73	5·37	157·36	80·09	–	168·83
Rampore Bauleah	394	6·27	3·97	9·70	6·46	4·83	3·53	3·35	3·83	3·96	3·25	4·30	2·89	4·68	127·92	45·69	–	81·22
Rungpore	323	6·60	6·20	6·05	6·82	5·90	5·08	4·15	4·73	5·92	4·98	7·32	7·81	5·98	169·04	3·10	–	86·69
Bograh	171	2·87	3·28	3·92	4·46	5·00	3·53	4·17	4·59	6·69	5·53	5·49	7·65	4·63	167·84	5·85	–	71·54
Mymensingh	474	3·64	3·24	3·87	3·35	2·76	2·83	3·31	4·02	3·68	3·44	3·61	4·81	3·53	143·04	–	–	69·62
Pubna	141	9·06	2·82	3·84	5·86	3·69	3·33	3·91	4·45	3·53	4·72	5·87	6·77	4·71	319·15	70·92	–	106·38
Furreedpore	410	7·87	5·80	7·70	8·15	5·34	5·37	4·20	4·99	4·32	6·65	6·50	6·70	5·99	196·34	2·44	2·44	34·15
Backergunge	495	6·47	6·35	6·02	5·26	4·06	7·97	8·15	7·07	4·62	4·15	5·82	5·70	5·95	96·57	34·34	–	195·96
Noacolly	224	7·35	5·58	7·29	7·06	5·75	4·89	6·77	7·20	6·63	5·89	5·39	5·55	6·29	311·16	8·93	–	31·25
Chittagong	327	3·27	2·45	3·65	4·45	3·56	4·02	2·99	2·21	3·38	4·55	3·71	2·54	3·40	84·71	–	–	21·41
Tipperah	398	2·17	2·60	1·86	2·53	2·20	1·65	2·11	1·96	1·58	1·94	2·23	2·07	2·07	90·95	2·51	2·51	25·12
Dacca	463	11·08	11·66	12·37	11·12	10·10	10·59	8·31	9·36	9·06	12·10	9·69	8·68	10·30	188·99	2·16	–	30·24
Sylhet	359	4·36	6·27	3·50	3·33	3·78	5·61	4·20	3·39	3·48	5·84	5·26	4·99	4·52	181·62	–	–	19·50
Cherrapoonjee	17	8·79	·72	7·00	7·86	4·91	4·77	3·85	1·49	·84	2·57	2·31	1·50	3·76	129·41	–	–	–
Cachar	211	4·37	4·12	2·63	3·55	6·06	5·79	5·95	6·75	9·39	9·37	9·62	9·41	6·81	203·32	33·18	–	99·53
Gowalparah	149	14·54	14·89	13·87	11·56	11·58	13·71	15·78	14·43	12·28	2·89	4·33	3·18	11·40	289·93	13·42	–	80·54
Gowhatty	153	6·87	7·50	9·26	9·55	11·25	8·81	7·67	7·72	8·67	5·15	4·51	2·04	7·56	183·01	13·07	–	17·90
Seebsagur	123	·80	1·16	1·19	1·66	2·36	4·29	3·86	2·89	3·89	1·46	2·83	2·79	2·34	148·78	–	–	73·17
Nowgong	92	7·98	4·61	5·56	4·04	6·70	4·23	8·36	6·13	5·89	2·48	1·19	·79	5·05	208·70	–	–	32·61
Tezpore	198	2·19	1·60	2·58	2·45	6·22	8·60	5·47	4·67	4·31	5·77	6·70	4·69	4·63	143·94	–	–	35·35
Debrooghur	125	1·01	1·17	2·45	1·98	2·14	3·71	5·91	4·84	4·53	5·15	4·43	2·05	3·29	130·40	–	–	104·00
Midnapore	544	3·94	3·64	4·95	5·38	4·13	8·30	3·72	4·10	4·37	5·01	4·58	3·84	4·21	147·98	7·35	3·67	27·57
Balasore	210	5·49	5·04	5·67	5·72	5·80	4·49	5·72	6·23	5·14	8·31	4·93	3·10	5·45	181·90	–	4·76	33·33
Cuttack	353	4·27	5·31	5·47	3·19	3·28	3·42	3·74	3·94	3·46	2·96	3·23	3·25	3·81	162·89	8·50	–	76·49
Pooree	32	8·75	8·82	5·56	14·44	4·00	7·18	5·22	8·00	11·54	5·48	8·70	4·90	6·94	237·50	–	–	–
Sumbulpore	175	10·75	22·63	16·27	16·47	10·58	17·34	16·55	17·31	15·15	12·52	10·58	11·03	14·93	374·86	262·86	–	331·43
Chyebassa	215	4·00	2·36	3·54	2·93	3·03	2·26	1·22	3·03	2·87	3·56	3·84	4·60	3·06	119·53	–	–	51·16
Ranchee	290	1·76	1·68	4·01	3·91	2·25	2·22	3·41	3·42	5·91	4·15	3·25	3·04	3·26	103·79	–	–	27·59
Hazareebaugh	439	5·46	3·18	4·25	4·08	5·75	7·35	8·08	4·38	3·80	·72	4·15	11·93	5·29	125·97	–	–	29·61
Monghyr	362	8·51	8·70	7·82	7·17	5·80	5·87	5·70	5·94	7·64	10·33	9·21	7·85	7·51	219·34	–	–	44·20
Bhaugulpore	359	4·10	3·32	5·26	5·82	6·34	6·21	5·16	3·87	5·85	6·05	4·38	3·96	5·08	206·13	27·85	–	61·28
Purneah	522	4·13	7·49	6·37	7·49	5·51	5·59	5·82	5·02	4·29	4·08	4·18	4·00	5·32	181·04	–	–	90·04
Darjeeling	51	5·95	6·45	4·46	3·21	5·57	4·86	3·92	3·69	4·53	2·56	·83	4·64	4·06	129·41	39·22	–	98·04
Gyah	339	3·72	3·60	5·33	5·47	4·46	4·61	5·66	5·92	4·29	5·54	3·61	2·90	4·45	92·33	2·95	2·95	29·50
Patna	467	1·83	1·26	2·30	3·72	3·30	4·11	5·44	7·87	7·68	8·68	6·56	4·39	4·82	134·05	17·13	2·14	72·80
Deegah	79	4·65	2·41	2·47	3·94	5·19	5·71	7·94	7·14	6·25	3·70	3·92	1·36	4·11	136·71	–	–	63·29
Arrah	499	·93	·21	1·04	1·00	·81	·71	1·01	1·48	2·22	1·21	·89	·44	1·01	30·46	6·01	–	62·12
Chumparun	203	5·69	3·23	3·00	3·15	4·28	5·05	3·68	5·56	3·78	2·86	2·24	1·63	3·69	111·82	14·78	–	68·97
Mozufferpore	433	15·11	10·78	7·38	10·05	10·22	7·58	4·83	5·47	5·81	5·44	5·27	4·52	7·64	248·50	2·31	–	55·43
Chuprah	440	2·90	3·24	3·10	3·33	4·36	3·38	3·81	5·03	4·45	3·76	3·76	3·21	3·70	79·01	2·27	2·27	72·72
Ghazeepore	662	1·54	1·79	2·41	1·01	·81	·35	·14	·51	·45	·69	·45	·47	·89	18·88	4·53	–	13·60
Benares	1,306	2·41	2·48	3·03	3·01	3·07	3·40	2·83	4·82	3·88	2·58	1·88	2·13	2·95	54·52	19·91	–	98·10
Mirzapore	351	2·07	1·72	1·23	1·99	2·07	1·30	1·13	3·22	3·65	4·13	3·93	2·71	2·42	51·85	2·85	–	48·43
Azimgurh	358	·90	1·87	1·64	1·27	1·66	1·49	1·53	1·49	1·79	2·15	1·80	1·98	1·64	55·31	2·79	–	8·35
Juanpore	269	2·95	1·99	1·57	1·68	1·88	2·28	2·37	3·02	3·90	2·58	2·63	2·28	2·45	64·68	–	–	33·46
Goruckpore	727	5·79	4·49	4·03	3·58	3·07	3·91	4·63	5·67	5·68	3·28	2·48	2·40	4·08	161·35	26·13	–	122·42
Gondah	92	2·82	4·18	6·49	4·06	3·61	3·60	4·24	3·47	4·04	7·30	4·61	4·35	4·35	135·87	–	–	–
Baraitch	107	2·75	3·93	3·39	4·63	7·06	3·39	4·88	6·80	7·43	5·04	6·22	4·62	5·07	180·37	–	–	–
Fyzabad	988	1·70	1·55	1·56	2·11	1·97	1·96	1·32	1·49	1·57	1·48	1·70	1·59	1·67	58·00	19·23	–	52·63
Sultanpore	528	4·19	3·17	3·81	3·65	3·64	4·17	2·37	3·23	3·26	3·84	2·34	2·21	3·32	104·55	34·09	–	62·50
Rae Bareilly	135	2·90	3·23	2·65	4·33	3·23	3·62	5·29	4·37	5·39	4·21	2·75	2·97	3·70	98·52	–	–	7·41
Pertabghur	162	3·83	3·92	6·88	8·75	4·66	5·25	4·66	4·45	3·99	4·81	2·64	2·21	4·88	153·09	–	–	6·17
Hurdui	148	1·94	1·75	3·27	3·72	1·19	2·67	1·96	2·13	2·50	·19	1·39	·25	1·94	50·68	–	–	33·78
Luckimpore	115	6·80	7·09	5·61	8·00	4·22	5·75	3·85	4·33	4·50	2·71	2·09	2·03	4·79	185·22	–	–	8·70
Lucknow	2,550	2·85	1·60	1·55	1·44	1·76	3·10	3·13	3·93	3·19	3·09	2·43	2·12	2·53	65·26	–	–	113·33
Seetapore	779	2·76	2·69	3·53	4·72	5·83	3·65	3·04	3·75	4·47	4·12	5·74	5·48	4·19	132·99	1·28	2·56	107·83
Etah	206	1·26	1·56	4·22	3·76	1·96	1·55	1·44	4·46	5·29	5·39	3·29	4·94	3·21	100·49	–	–	19·42
Humeerpore	133	4·05	7·25	8·99	7·89	3·31	4·19	5·65	6·42	3·87	4·77	4·45	2·23	5·29	151·13	–	–	7·52
Oraie	128	5·59	1·92	1·68	2·11	4·89	2·20	3·77	3·83	5·49	9·48	9·47	8·98	4·90	150·78	–	7·81	23·44
Futtehghur	404	2·97	3·58	7·55	11·84	6·97	2·48	2·84	3·37	2·78	2·02	1·62	1·30	4·55	112·38	–	2·48	158·42
Cawnpore	279	2·95	3·68	6·30	6·17	7·84	2·64	4·77	5·78	4·71	3·07	2·51	1·96	4·31	140·50	–	–	46·59
Banda	258	4·96	5·02	4·94	4·35	3·82	4·25	4·09	3·49	3·60	4·35	3·02	2·69	3·97	149·23	11·63	–	46·51
Nagode	116	10·20	7·03	11·29	12·30	10·08	12·28	14·15	11·76	12·87	14·56	11·65	8·74	11·27	191·38	–	–	43·10
Allahabad	2,192	1·93	2·33	2·48	2·70	2·33	2·82	2·15	2·27	2·64	2·59	2·33	2·10	2·39	95·39	12·77	–	39·69
Raipore	343	11·09	3·92	2·39	2·59	1·86	3·33	2·47	2·97	2·76	3·29	3·77	–	3·53	111·37	67·06	–	239·07
Belaspore	81	2·31	1·15	–	·94	2·95	–	2·69	2·71	3·47	3·48	2·57	1·15	1·79	70·37	37·04	–	61·73
Bandhara	417	3·37	2·82	4·24	4·14	3·54	3·79	4·20	4·55	5·08	4·45	4·43	4·53	4·09	97·60	–	2·40	67·15

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the general Statistics of Sickness and Mortality in the Gaols of the *Bengal* Presidency, &c.—*continued.*

STATIONS.	Average Strength for the Year.	DAILY SICK PER CENT OF AVERAGE STRENGTH IN EACH MONTH.												Daily Sick per Cent. of Average Strength for the Year.	Admitted per Cent. of Average Strength.	DIED PER 1,000 OF AVERAGE STRENGTH.		
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.			A. Cholera.	B. Sudden Deaths out of Hospital.	C. All Causes.
Chanda	170	6·73	4·58	4·36	4·14	3·05	3·92	5·05	4·05	4·79	4·82	3·79	4·62	4·47	131·77	29·41	–	70·59
Kowtah	68	8·20	1·50	7·27	4·88	3·82	·29	2·24	5·67	22·94	14·09	11·59	7·13	7·00	183·82	–	–	14·71
Nagpore	559	9·67	7·00	6·48	5·91	5·18	5·77	5·50	7·83	7·99	10·76	8·90	6·84	7·11	137·75	16·10	–	57·25
Chindwara	100	4·18	2·39	4·32	2·15	1·07	1·30	1·55	·70	2·91	5·84	4·24	2·22	2·86	112·00	–	–	70·09
Sironcha	30	5·43	6·91	8·64	6·16	1·46	8·33	12·18	6·94	4·86	9·50	5·13	2·37	6·33	176·66	–	–	–
Mundla	59	10·17	12·00	7·89	8·05	5·97	9·09	8·80	6·41	7·55	11·80	7·84	5·56	8·31	332·20	–	–	67·80
Jubbulpore (Civil).	471	5·22	6·14	6·39	5·38	4·73	5·87	5·06	5·89	6·34	7·05	7·05	6·30	5·90	124·20	–	–	27·68
Dumoh	207	1·49	2·87	3·21	3·18	3·41	3·74	4·96	4·07	5·09	14·13	7·14	5·67	4·85	162·79	–	–	19·32
Saugor	348	8·59	9·72	7·08	7·03	6·68	5·77	6·35	10·72	9·86	9·01	6·77	7·78	7·94	264·66	45·98	–	66·09
Nursingpore	192	1·68	1·25	3·03	5·21	2·66	3·37	5·00	4·89	4·47	6·44	6·39	4·59	4·03	161·98	–	–	10·42
Lullutpore	259	2·92	1·24	1·75	2·73	2·07	2·19	1·15	1·84	2·84	6·93	6·36	5·05	3·17	91·89	–	3·86	19·30
Jhansi	298	3·20	3·04	3·52	4·25	2·49	3·03	3·46	3·92	5·01	5·86	7·14	5·29	4·28	184·90	–	–	10·07
Seonee	268	3·14	3·69	2·65	2·65	2·19	3·38	3·56	2·74	2·92	4·66	3·06	3·28	3·19	75·00	22·39	–	89·55
Baitool	163	3·86	3·51	4·48	2·92	3·03	3·99	6·83	3·95	6·82	7·26	5·22	3·55	4·57	144·78	–	–	12·27
Sehore	95	3·89	6·19	6·70	7·07	6·40	8·54	5·81	6·05	6·49	7·86	6·25	6·19	6·45	264·21	–	–	21·05
Hoshungabad	272	2·94	4·42	5·12	7·02	7·60	6·04	6·25	7·14	8·11	9·77	7·04	9·07	6·63	131·99	–	–	22·06
Mundlaisir	148	5·77	6·38	5·78	6·32	6·43	6·33	11·20	4·60	8·96	5·40	5·56	18·52	6·63	167·57	6·76	–	33·78
Ajmere	229	6·15	6·91	6·05	5·47	5·41	5·22	5·30	3·33	5·51	7·98	7·08	7·51	6·04	165·94	–	–	61·14
Beaur	103	5·83	5·56	5·08	7·45	3·70	3·12	5·62	10·00	8·18	6·67	6·82	4·59	6·12	171·84	–	–	39·42
Muttra	243	2·09	1·59	1·98	4·52	4·03	3·31	2·26	3·01	4·98	4·90	3·48	3·44	3·30	176·13	–	–	32·92
Agra	1,993	3·35	6·13	12·32	22·08	7·50	3·89	2·80	2·89	2·69	1·88	1·93	2·39	5·57	113·60	–	1·00	179·63
Secundra	257	7·59	9·64	14·57	28·59	15·17	7·67	3·29	3·97	13·67	4·34	1·99	2·33	11·41	315·56	–	–	295·72
Etawah	183	1·30	1·36	·83	1·74	2·60	1·75	1·27	1·64	1·70	·75	1·43	2·20	1·54	146·99	–	–	5·46
Mynpoorie	240	4·98	3·99	4·46	3·70	4·02	3·88	2·67	3·44	5·04	5·00	2·14	3·59	3·88	124·17	–	4·17	8·34
Allyghur	165	2·04	2·18	3·43	4·73	4·90	3·82	2·36	2·17	2·77	3·50	2·85	3·16	3·12	127·88	–	6·06	36·36
Bolundshuhur	141	2·63	2·27	4·26	6·43	7·02	3·00	3·38	3·88	4·03	4·31	4·60	3·87	4·06	125·53	–	–	14·18
Shahjehanpore	258	4·10	4·59	4·90	3·69	5·98	5·50	5·14	7·29	7·02	6·94	2·81	2·86	5·00	120·54	–	–	23·26
Bareilly	1,449	·71	·65	·83	·98	·78	·71	·62	·63	·65	·51	·57	·64	·68	27·95	–	–	13·11
Budaon	212	5·58	3·81	6·13	8·69	5·30	6·10	3·17	·50	6·88	6·13	6·53	5·96	5·45	120·76	–	–	28·30
Saharunpore	204	2·03	2·32	1·26	1·25	1·21	1·26	1·26	1·44	2·13	1·23	1·21	2·25	1·57	46·08	–	–	14·61
Bijnore	230	1·59	2·51	2·54	2·88	2·90	3·54	3·04	2·71	2·76	1·43	·93	·69	2·26	160·00	–	–	13·04
Deyrah	67	3·07	3·95	4·74	3·97	5·71	5·65	5·00	2·79	2·88	2·71	4·91	7·67	4·34	170·15	–	–	59·70
Almorah	130	4·50	4·83	9·04	10·59	9·27	9·48	12·58	8·40	9·66	8·22	8·33	6·75	8·55	290·00	–	–	7·69
Mozufferanggur	97	·68	·33	1·11	·25	·94	2·25	1·02	1·74	·38	1·65	1·35	·64	1·06	62·89	–	–	10·31
Moradabad	357	1·27	1·87	2·57	2·62	3·19	2·16	1·90	2·08	2·02	1·81	1·81	1·68	2·09	70·31	–	–	64·43
Meerut	1,415	·87	1·00	1·08	1·12	1·38	1·42	1·40	1·04	1·38	1·94	1·68	1·41	1·31	50·25	–	2·12	36·75
Delhi	299	5·29	3·39	4·93	10·80	15·45	16·32	3·31	5·51	13·01	17·20	11·34	7·43	9·10	264·21	–	3·35	179·63
Rohtuk	218	1·55	1·71	2·15	2·36	3·36	3·54	3·75	2·47	2·21	2·52	1·64	1·44	2·39	92·20	–	–	22·94
Hissar	219	3·63	3·20	3·01	1·99	1·75	3·63	2·66	1·81	2·39	1·43	·91	2·20	1·00	24·17	–	–	18·96
Sirsa	211	·15	–	·26	–	1·00	·57	1·82	1·47	2·29	2·33	·91	2·20	1·00	24·17	–	–	18·96
Kurnaul	48	7·04	7·72	7·49	10·14	12·57	7·62	8·88	6·68	11·09	7·19	3·79	2·38	7·27	181·25	–	–	83·33
Umballa	866	2·50	2·39	1·94	2·19	3·08	3·34	2·77	3·13	7·77	49·01	31·74	19·16	6·25	178·41	1·15	–	307·16
Loodianah	145	7·14	6·01	5·60	6·11	6·15	6·40	6·67	6·08	6·37	6·21	5·09	4·30	5·82	195·86	–	–	20·69
Jullundur	332	4·06	2·77	3·11	3·44	3·22	3·01	2·37	2·81	1·50	1·67	1·47	1·60	2·64	73·49	–	3·01	12·05
Ferozepore	441	·72	·87	1·16	·66	·40	·74	·59	·42	·26	·30	·15	·05	·53	13·38	–	–	9·07
Umritsur	554	4·34	4·50	4·56	5·10	4·18	3·64	2·97	2·55	3·47	5·66	7·21	14·41	5·16	166·43	–	–	138·99
Lahore	1,644	20·48	15·47	6·17	3·31	2·07	2·14	1·00	1·60	1·68	1·48	1·24	1·50	4·81	93·13	–	·61	110·71
Lahore Female Gaol.	168	7·15	11·18	24·66	34·25	26·15	15·49	10·67	9·95	16·07	11·98	10·95	7·99	15·23	281·55	–	–	83·33
Sealkote	191	2·40	1·42	1·08	·80	2·06	2·11	1·72	1·26	2·21	2·81	1·79	1·18	1·74	30·89	–	–	–
Dhurmsalla	137	4·47	3·92	3·48	3·55	3·88	4·74	3·97	5·53	6·36	4·26	2·95	1·85	4·06	174·45	–	–	29·20
Goordaspore	295	5·86	6·27	6·51	3·84	6·98	4·63	3·31	3·73	3·01	4·63	2·48	1·52	4·28	80·68	–	–	23·73
Goojranwalla	330	3·48	12·24	14·54	12·09	3·16	1·39	1·05	·92	1·30	·78	·69	·84	4·26	149·39	–	–	172·73
Goojrat	264	·17	·33	·39	·03	·64	·37	·39	·02	·86	·57	·55	·47	·40	15·53	–	–	3·79
Shahpore	239	·21	·45	1·10	2·14	2·19	2·21	1·08	2·10	1·44	·45	·90	·70	1·24	31·38	–	–	4·18
Jhelum	220	·61	·87	·47	·94	1·79	2·02	1·65	2·29	2·50	1·76	2·54	·77	1·56	70·00	–	–	4·55
Goojaira	315	2·55	2·42	1·75	1·83	1·34	1·09	1·10	1·35	1·06	·68	·40	1·30	1·36	40·64	–	–	28·57
Mooltan	653	4·72	7·28	20·95	9·57	4·75	1·87	·72	·82	1·01	·65	·65	·50	3·87	113·32	–	1·53	111·79
Jhung	268	5·64	3·43	1·34	2·21	5·36	4·07	4·64	2·88	2·39	1·77	1·45	1·70	2·95	81·71	–	–	–
Dera Ghazee Khan.	42	9·88	3·60	8·78	13·20	10·27	6·25	10·69	8·51	4·66	7·09	6·57	6·85	8·17	300·00	–	–	–
Dera Ismael Khan.	255	2·47	2·36	1·91	1·65	1·92	1·00	1·92	1·76	1·55	3·42	3·77	1·76	2·14	118·82	–	–	11·76
Kohat	113	13·55	14·65	14·86	19·39	25·35	22·55	12·57	14·42	14·53	13·26	10·24	6·65	15·26	462·83	–	–	8·85
Bunnoo	91	3·11	2·11	2·67	3·15	4·44	4·06	6·10	4·88	6·78	7·01	7·47	6·83	5·07	226·37	–	–	32·97
Rawulpindee	762	6·54	7·97	11·61	11·48	6·06	5·35	4·81	3·68	5·53	5·36	5·87	6·29	6·70	201·44	–	–	76·02
Peshawur	366	8·19	5·08	3·65	4·55	3·50	2·81	3·29	3·22	3·24	5·05	2·80	2·15	3·91	164·29	–	–	29·22

In employing the statistics of a floating as distinguished from a permanent population, it is necessary to keep in view the fact that we are dealing with two quantities which cannot be accurately represented by the same ratio. The average strength is a fixed quantity in the one case; in the other it represents a larger number of individuals than is shown by the average for any period, whose risk has been incurred for a portion of the period only. When, therefore, we give ratios in the same tabular form for European troops and for gaols, this distinction must be noted, for in so far they do not admit of comparison. As an index of results with which to compare future or past experience, such ratios are of value as furnishing an approximate estimate (for no rates can be positive when applied to an unstable body of men); and the nearness with which the gaol population maintains its average strength uninterruptedly throughout a series of years entitles us to conclude that the aggregate of prisoners included in the risk from year to year is nearly identical. For three years past the average strength of the gaol population of the Presidency has scarcely altered; in these tables it is reckoned for those years at 52,871, 52,401, and 52,598, and for the first six months of 1865 the average is 52,666; and the same holds good in regard to Provinces. When, therefore, we say that in such a year, with an aggregate of so many prisoners and a daily average of so many, a certain number have died per 1,000; and again, that in a second year, with an equal number in the aggregate and in the average three times the number have died, the ratios in either case are perfectly comparable. It is quite a tangible fact, even when reduced to ratios, that three times the number of prisoners have died annually in the gaols of the Punjab since the introduction of typhus in 1861, or that when cholera dies out in any province the mortality is diminished by so much. When, however, we come to tabulate in ratios the results for individual gaols, the results become the less satisfactory the smaller the number of prisoners, and the longer the period to which the ratios refer. The daily sick rate of each month is of an approximate value; the annual admission-rate and death-rate are much less to be relied on, as applicable to the number among whom the risk of succumbing to prison influence has been distributed. The statistical record of the population of a gaol must, in fact, be regarded as a register of events, apart from their inclusion in a system of calculations. The reduction to ratios of details which have no significance in themselves, or in their immediate bearing, is useless, and the ratios so recorded are constantly liable to misinterpretation.

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the Ratio in which the PRINCIPAL DISEASES have contributed to make up the ADMISSION RATE of the Year in the Gaol Hospitals of the *Bengal* Presidency.

STATIONS.	Average Strength for the Year.	ADMITTED INTO HOSPITAL PER CENT. OF AVERAGE STRENGTH.												Admitted per Cent. of the Average Strength from all Causes.
		Cholera.	Fever, Intermittent.	Fever, Remittent and Continued.*	Dysentery and Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Phthisis Pulmonalis.	Dropsy.	Atrophy and Anœmia.	Scurvy.	All other Causes.	
Alipore	1,7[illegible]3	3·85	80·48	·17	54·88	·22	·39	2·51	1·06	1·00	1·23	–	26·32	172·11
Baraset	139	·72	87·05	17·99	42·45	–	2·88	5·75	–	·72	–	–	60·43	217·99
Jessore	489	9·61	14·72	10·02	26·59	·20	2·66	23·52	·61	·20	1·84	–	64·42	154·39
Kishnaghur	363	1·10	36·09	1·10	16·25	–	1·10	1·38	–	·83	1·38	–	19·56	78·79
Moorshedabad	186	–	36·02	·54	32·26	–	1·08	1·61	–	–	–	–	61·29	132·80
Howrah	127	2·36	36·22	1·58	17·32	–	·79	–	–	–	2·36	–	20·47	81·10
Hooghly	451	6·21	74·94	1·11	60·75	–	3·77	9·98	·67	1·77	–	·44	77·83	237·47
Burdwan	411	1·95	65·94	1·22	30·66	–	1·70	3·89	·49	·97	2·43	–	80·29	189·54
Bancoorah	395	10·63	13·67	·76	11·39	–	·51	1·26	–	·51	–	–	75·19	113·92
Purulea	183	–	32·78	–	18·58	–	–	1·64	·54	–	3·83	–	48·09	105·46
Raneegunge	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sooree	285	–	37·54	5·97	7·37	–	1·75	1·05	·70	–	7·02	·35	36·84	98·59
Deagurh	89	1·12	61·80	6·74	20·22	–	–	2·25	–	–	7·87	–	15·73	115·73
Rajmehal	169	20·71	44·38	3·55	27·81	–	3·55	1·18	·59	·59	·59	–	64·50	167·45
Malda	72	–	–	–	–	–	–	–	–	–	–	–	–	–
Dinajpore	462	18·18	57·79	3·03	42·86	–	1·08	6·06	·22	3·46	–	·22	24·46	157·36
Rampore Bauleah	394	15·99	36·55	·25	24·37	·51	1·27	7·36	·25	1·02	1·52	–	38·83	127·92
Rungpore	323	·93	42·73	4·34	40·25	·93	4·64	12·07	·31	4·64	4·64	–	53·56	169·04
Bograh	171	·59	50·29	·59	48·54	–	–	7·60	1·17	1·17	–	–	57·89	167·84
Mymensingh	474	–	45·36	3·59	48·52	·21	1·27	10·34	·42	3·59	1·05	·42	28·27	143·04
Pubna	141	18·44	90·07	2·13	68·79	1·42	2·13	2·83	·71	1·42	1·42	–	129·79	319·15
Furreedpore	410	·24	71·22	5·37	41·71	–	7·07	6·58	·73	–	·98	–	62·44	196·34
Backergunge	495	8·89	19·60	–	38·38	·61	·20	3·03	–	·81	3·23	1·82	20·00	96·57
Noacolly	224	2·23	114·29	·45	50·89	–	–	–	5·12	·45	–	·45	139·28	313·16
Chittagong	327	·31	50·15	–	12·23	·92	–	2·14	·31	2·14	–	–	16·51	84·71
Tipperah	398	·25	50·75	·25	17·09	·25	–	5·03	·50	–	·75	–	16·08	90·95
Dacca	463	1·30	56·59	56·16	24·19	–	1·94	6·48	·22	–	·86	–	41·25	188·99
Sylhet	359	–	71·87	·28	28·41	–	·83	6·13	·56	·28	–	2·51	70·75	181·62
Cherrapoonjee	17	–	–	–	–	–	–	–	–	–	–	–	–	–
Cachar	211	4·74	64·45	–	62·09	–	8·53	2·84	–	2·37	–	–	58·29	203·22
Gowalparah	149	15·44	20·80	75·84	24·16	4·70	2·01	9·40	–	8·05	4·03	·67	124·83	289·93
Gowhatty	153	1·96	69·28	–	46·41	–	1·31	13·72	–	–	–	–	50·33	183·01
Seebsagur	123	–	59·35	6·51	43·90	–	·81	·81	–	2·44	3·25	–	31·71	148·78
Nowgong	92	–	94·56	3·26	71·74	–	–	–	–	1·09	1·09	–	36·96	208·70
Tezpore	198	–	35·86	3·54	34·34	–	2·53	10·10	–	–	7·07	–	50·50	143·94
Debrooghur	125	·80	20·80	–	45·60	–	–	1·60	–	4·80	–	–	56·80	130·40
Midnapore	544	1·10	60·29	6·25	28·86	·55	·37	·92	·37	·74	·74	–	47·79	147·98
Balasore	210	–	48·10	1·43	37·14	1·90	–	22·38	2·38	–	1·90	–	66·67	181·90
Cuttack	353	·142	50·99	·28	30·03	–	–	1·98	·85	·28	5·10	–	71·96	162·89
Pooree	32	–	–	–	–	–	–	–	–	–	–	–	–	–
Sumbulpore	175	38·29	66·29	·57	31·43	–	–	9·71	–	–	–	–	228·57	374·86
Chyebassa	215	1·86	29·77	1·86	18·14	·93	2·33	·46	·46	·93	–	·93	61·86	119·53
Ranchee	290	–	33·45	1·72	13·45	–	1·04	2·41	·69	·34	·34	1·38	48·97	103·79
Hazareebaugh	439	–	33·03	–	15·04	·91	·68	4·78	·91	1·14	–	3·87	65·61	125·97
Monghyr	362	·28	74·31	1·66	63·26	–	–	6·08	·55	·28	–	–	72·92	219·34
Bhaugulpore	359	15·88	74·93	–	30·92	–	·28	·84	–	·55	–	–	82·73	216·13
Purneah	522	–	46·56	·19	49·04	–	·77	4·79	·38	·77	1·15	–	77·59	181·04
Darjeeling	51	–	–	–	–	–	–	–	–	–	–	–	–	–
Gyah	339	·30	30·68	1·77	25·96	·30	–	·88	·88	·59	1·47	·30	29·20	92·33
Patna	467	6·00	55·25	3·86	46·25	–	·21	1·28	–	–	1·28	2·36	17·56	134·05
Deegah	79	–	–	–	–	–	–	–	–	–	–	–	–	–
Arrah	499	1·20	8·22	·60	17·03	–	–	·40	–	–	–	–	2·81	30·46
Chumparun	203	3·46	42·37	–	30·05	–	1·48	4·43	–	·49	1·48	–	29·06	111·82
Mozufferpore	433	3·47	42·03	17·09	116·63	–	·92	2·54	–	·23	16·17	–	49·42	248·50
Chuprah	440	2·05	18·18	·68	38·64	·20	·20	–	–	–	–	·20	18·86	79·01
Ghazeepore	662	·60	3·02	·15	2·57	–	–	1·21	–	·15	–	–	11·13	18·88
Benares	1,306	3·75	10·41	·08	11·87	·08	·38	2·30	2·60	·08	–	·08	22·89	54·52
Mirzapore	351	1·14	14·25	1·14	4·56	–	–	·28	–	–	·85	–	29·63	51·85
Azimgurh	358	1·12	15·08	·28	16·76	–	–	·84	–	–	–	–	21·23	55·31
Juanpore	269	–	18·96	1·49	15·98	–	–	·74	–	–	1·12	–	26·39	64·68
Ghazeepore	727	5·78	25·86	·69	41·13	–	·14	3·16	·14	·27	·82	–	83·36	161·35
Gondah	92	–	40·22	–	17·39	–	–	–	–	–	–	–	78·26	135·87
Baraitch	107	–	71·96	–	35·51	–	·94	2·80	–	–	–	–	69·16	180·37
Fyzabad	988	5·67	19·84	·10	23·79	–	–	·30	–	–	–	–	8·30	58·00
Sultanpore	528	10·23	32·95	1·33	24·24	–	·19	·76	–	–	–	–	34·85	104·55
Rae Bareilly	135	–	38·52	1·48	13·33	–	–	·74	–	–	1·48	–	42·97	98·52
Pertabgurh	162	·62	38·27	4·94	27·78	–	·62	6·79	–	–	–	–	74·07	153·09
Hurdui	148	–	6·76	1·35	6·76	–	–	1·35	–	·68	–	–	33·78	50·68
Luckimpore	115	–	46·96	1·74	40·00	–	–	1·74	–	–	·87	–	93·91	185·22
Lucknow	2,550	·12	6·51	3·33	25·22	–	·16	·78	·04	·04	·04	–	29·02	65·26
Seetapore	779	·13	54·04	·77	27·08	·26	·13	2·95	–	–	·26	–	47·37	132·99

* In classing Intermittent Fevers, and Remittent and Continued Fevers separately, in place of including both groups under the general head "Fevers," it was intended that the predominance of the ratios should indicate those gaols in which Gaol Typhus had prevailed. The object, however, is incompletely fulfilled, since in some gaols it has become the custom to return a certain number of cases of fever regularly as Remittent or Continued, while others return all fevers as Intermittent.

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the Ratio in which the Principal Diseases have contributed to make up the Admission Rate, &c.—*continued.*

STATIONS.	Average Strength for the Year.	ADMITTED INTO HOSPITAL PER CENT. OF AVERAGE STRENGTH.												Admitted per Cent. of the Average Strength from all Causes.
		Cholera.	Fever, Intermittent.	Fever, Remittent and Continued.	Dysentery and Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Phthisis Pulmonalis.	Dropsy.	Atrophy and Anæmia.	Scurvy.	All other Causes.	
Etah	206	·49	22·81	2·43	6·31	–	–	8·74	·97	–	–	–	58·74	100·49
Humeerpore	133	–	51·13	–	15·04	–	1·50	1·50	–	–	–	–	81·96	151·13
Oraie	128	–	70·31	1·56	8·59	–	–	5·47	–	–	3·91	·78	60·16	150·78
Futtehghur	404	–	6·68	77·23	5·20	–	·25	1·24	–	·25	–	–	21·53	112·38
Cawnpore	279	–	36·20	44·09	10·39	–	–	·36	–	–	·72	–	48·74	140·50
Banda	258	3·10	55·43	1·94	22·48	–	2·71	2·71	·39	·39	·39	–	59·69	149·23
Nagode	116	–	55·17	27·59	19·83	–	–	3·45	–	–	–	·86	84·48	191·38
Allahabad	2,192	4·70	31·98	·23	14·87	·09	·78	1·28	·27	–	·27	–	40·92	95·39
Raipore (11 months, Jan. to Nov.)	343	12·53	41·40	18·37	19·24	–	–	1·17	–	–	1·17	–	17·49	111·37
Belaspore	81	6·17	14·82	2·47	16·05	–	–	1·23	–	–	–	–	29·63	70·37
Bandhara	417	–	33·09	·24	23·98	–	·24	·96	–	–	1·68	–	37·41	97·60
Chanda	170	8·24	54·12	16·47	–	–	–	1·76	–	–	1·18	–	50·00	131·77
Kowtah	68	–	–	–	–	–	–	–	–	–	–	–	–	–
Nagpore	559	5·01	63·86	·72	18·07	–	–	·72	·18	–	–	–	49·19	137·75
Chindwara	100	–	32·00	2·00	16·00	–	–	1·00	–	–	–	–	61·00	112·00
Sironcha	30	–	–	–	–	–	–	–	–	–	–	–	–	–
Mundla	59	–	–	–	–	–	–	–	–	–	–	–	–	–
Jubbulpore (Civil)	471	–	39·91	7·22	19·11	–	–	4·67	–	–	–	–	53·29	124·20
Dumoh	207	–	87·92	·48	13·04	–	·97	4·34	–	–	·97	–	55·07	172·79
Saugor	348	13·22	72·13	2·30	42·53	–	·57	8·62	·29	–	2·59	·29	122·13	264·66
Nursingpore	192	–	42·23	7·81	19·79	–	2·09	1·56	–	·52	–	–	86·98	161·93
Lullutpore	259	–	46·33	–	14·29	–	·39	·77	–	–	1·16	–	28·95	91·89
Jhansi	298	–	73·15	–	16·78	–	1·68	6·38	–	–	–	–	86·91	184·90
Seonee	268	3·73	19·03	7·84	12·31	–	0·37	1·49	–	–	–	–	30·23	75·00
Baitool	163	–	50·92	–	8·59	–	–	4·29	–	–	·61	–	80·37	144·78
Sehore	95	–	–	–	–	–	–	–	–	–	–	–	–	–
Hoshungabad	272	–	55·15	·37	9·92	–	·37	3·68	–	–	–	–	62·50	131·99
Mundlaisir	148	2·03	64·19	3·38	28·38	–	3·38	12·84	2·70	–	2·03	4·73	43·91	167·57
Ajmere	229	–	72·05	10·92	21·89	–	·44	8·73	–	2·18	·44	·44	45·85	165·94
Beaur	103	–	52·43	2·91	8·74	–	–	·97	–	–	10·68	–	96·11	171·84
Muttra	243	–	66·67	16·05	20·58	–	–	7·40	–	–	–	–	65·43	176·13
Agra	1,993	–	14·60	65·63	8·33	–	–	·40	·15	·10	1·11	·10	23·18	113·60
Secundra	257	–	–	–	–	–	–	–	–	–	–	–	–	–
Etawah	183	–	54·64	1·09	15·85	–	–	3·28	–	·55	–	–	71·58	146·99
Mynpoorie	240	–	47·08	–	15·84	–	·83	1·67	–	–	·42	–	58·33	124·17
Allyghur	165	–	41·82	7·88	12·73	–	–	3·03	·60	–	–	–	61·82	127·88
Bolundshuhur	141	–	34·75	7·09	9·93	–	–	1·42	–	–	–	–	72·34	125·53
Shahjehanpore	258	–	18·99	3·49	6·59	–	–	9·69	–	–	–	–	81·78	120·54
Bareilly	1,449	–	·34	17·46	4·35	·07	–	·83	–	·14	·14	–	4·62	27·95
Budaon	212	–	20·28	15·57	5·19	–	–	1·41	–	–	1·89	–	76·42	120·76
Seharunpore	204	–	10·79	–	3·92	–	–	1·47	–	–	·49	–	29·41	46·08
Bijnore	230	–	43·48	1·74	12·61	–	·43	8·70	–	–	–	–	93·04	160·00
Deyrah	67	–	47·76	4·47	29·85	–	–	2·99	–	–	2·99	–	82·09	170·15
Almorah	130	–	99·23	1·54	27·69	1·54	–	11·54	–	–	6·92	–	141·54	290·00
Mozuffernuggur	97	–	21·65	–	6·19	–	–	2·06	–	–	–	–	32·99	62·89
Moradabad	357	·28	12·60	16·81	13·45	·28	–	·56	–	·28	1·96	–	24·09	70·31
Meerut	1,415	–	21·70	·71	6·29	·07	·07	2·12	·21	–	·21	·07	18·80	50·25
Delhi	299	–	145·49	52·48	19·40	1·00	2·01	3·01	–	–	1·00	–	39·46	264·21
Rohtuk	218	–	37·16	2·29	8·71	–	–	·92	–	–	–	·46	42·66	92·20
Hissar	219	–	54·34	–	6·39	–	–	1·37	–	–	–	–	29·68	91·78
Sirsa	211	–	11·37	4·74	2·37	–	·95	·47	–	–	–	–	4·27	24·17
Kurnaul	48	–	–	–	–	–	–	–	–	–	–	–	–	–
Umballah	866	·12	39·72	78·29	25·63	·35	·12	3·46	·12	–	5·31	–	25·29	178·41
Loodianah	145	–	57·93	1·38	20·69	–	2·07	–	·69	–	11·03	·69	101·38	195·86
Jullundur	332	–	19·58	·60	13·55	–	·30	2·11	–	·30	·60	–	36·45	73·49
Ferozepore	441	–	3·17	·23	2·72	–	–	1·13	–	–	·23	–	5·90	13·38
Umritsur	554	–	102·53	–	9·93	·36	–	2·35	·18	–	·54	–	50·54	166·43
Lahore	1,644	–	57·42	15·45	4·74	–	·43	1·89	·18	·06	·73	·06	12·17	93·13
Lahore Female Gaol	168	–	135·72	35·12	14·88	1·19	7·14	3·57	–	–	3·57	1·19	79·17	281·55
Sealkote	191	–	8·90	–	5·76	–	–	1·05	–	–	–	–	15·18	30·89
Dhurmsalla	137	–	90·51	3·65	23·36	–	–	5·84	·73	1·46	–	–	48·90	174·45
Goordaspore	295	–	43·73	3·05	6·10	·34	1·02	·34	–	–	·34	–	25·76	80·68
Goojranwalla	330	–	80·30	31·52	16·36	·91	·61	1·52	·30	·30	·30	–	17·27	149·39
Goojrat	264	–	5·68	–	3·03	–	–	·76	–	–	–	–	6·06	15·53
Shahpore	239	–	7·95	–	1·67	·84	–	2·93	–	–	–	–	17·99	31·38
Jhelum	220	–	39·55	–	9·55	–	–	·91	·45	–	–	–	19·54	70·00
Goojaira	315	–	13·02	·32	4·13	·32	–	4·44	–	–	1·90	·32	16·19	40·64
Mooltan	653	–	91·88	–	10·57	–	·15	·61	–	–	2·15	·61	7·35	113·32
Jhung	268	–	15·67	·37	8·58	–	1·50	4·48	·37	·37	·37	3·73	46·27	81·71
Dera Ghazee Khan	42	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera Ismael Khan	255	–	43·92	3·14	12·94	–	–	10·59	–	·39	–	·39	47·45	118·82
Kohat	113	–	–	–	–	–	–	–	–	–	–	–	–	–
Bunnoo	91	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawulpindee	763	–	139·32	–	12·06	·39	1·05	3·54	·39	·13	2·10	·13	42·33	201·44
Peshawur	308	–	89·94	1·30	29·87	–	–	1·95	–	–	–	5·19	36·04	164·29

See Note, page 197.

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the PREVALENCE of CHOLERA in each Month, and the Distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the Year.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Alipore	793	2	4	14	19	7	3	3	3	4	1	6	3	69	–	17	–
Baraset	139	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–
Jessore	489	–	–	–	46	–	–	–	1	–	–	–	–	47	–	22	–
Kishnaghur	363	–	–	3	–	–	–	–	–	1	–	–	–	4	–	3	–
Moorshedabad	186	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Howrah	127	–	–	–	1	–	–	–	–	–	–	2	–	3	–	1	–
Hooghly	451	–	17	2	3	–	–	1	4	–	1	–	–	28	–	7	–
Burdwan	411	–	–	4	4	–	–	–	–	–	–	–	–	8	–	4	–
Bancoorah	395	–	8	31	–	–	3	–	–	–	–	–	–	42	–	16	–
Purulea	183	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Raneegunge	26	–	2	1	–	–	–	–	–	–	–	–	–	3	–	1	–
Sooree	285	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rajmehal	169	–	–	–	2	33	–	–	–	–	–	–	–	35	–	14	–
Deogurh	89	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–
Malda	72	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dinagepore	462	–	–	6	70	8	–	–	–	–	–	–	–	84	–	37	–
Rampore Bauleah	394	–	10	45	7	1	–	–	–	–	–	–	–	63	–	18	–
Rungpore	323	–	–	–	3	–	–	–	–	–	–	–	–	3	–	1	–
Bograh	171	–	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–
Mymensingh	474	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pubna	141	–	–	–	14	2	–	–	–	–	–	2	8	26	–	–	–
Furreedpore	410	–	1	–	–	–	–	–	–	–	–	–	–	1	–	10	–
Backergunge	495	3	2	19	7	–	1	–	–	–	6	5	1	44	–	1	–
Noaeelly	224	–	–	–	–	1	–	4	–	–	–	–	–	5	–	17	–
Chittagong	327	–	–	–	–	1	–	–	–	–	–	–	–	1	–	2	–
Tipperah	398	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–
Dacca	463	1	1	2	2	–	–	–	–	–	–	–	–	6	–	1	–
Sylhet	359	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Cherrapoonjee	17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cachar	211	–	–	–	–	–	1	1	–	–	–	8	–	10	–	–	–
Gowalparah	149	–	–	–	3	1	11	5	2	1	–	–	–	23	–	7	–
Gowhatty	153	–	–	–	–	3	–	–	–	–	–	–	–	3	–	2	–
Seebsagur	123	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–
Nowgong	92	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Tezpore	198	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Debrooghur	125	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–
Midnapore	544	–	2	3	–	1	–	–	–	–	–	–	–	6	–	–	–
Balasore	210	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–
Cuttack	353	–	–	1	–	–	–	4	–	–	–	–	–	5	–	–	–
Pooree	32	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–
Sumbulpore	175	–	–	–	58	9	–	–	–	–	–	–	–	67	–	46	–
Chyebassa	215	–	–	1	1	2	–	–	–	–	–	–	–	4	–	–	–
Ranchee	290	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hazareebaugh	439	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Monghyr	362	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–
Bhaugulpore	359	–	–	5	24	12	15	1	–	–	–	–	–	57	–	10	–
Purneah	522	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Darjeeling	51	–	–	–	–	–	2	–	–	–	–	–	–	2	–	2	–
	14,441	6	47	140	265	81	36	19	11	6	8	24	12	655	4·54	250	17·31
Gyah	339	–	–	–	–	1	–	–	–	–	–	–	–	1	–	1	–
Patna	467	–	–	2	24	1	–	–	1	–	–	–	–	28	–	8	–
Deegah	76	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Arrah	499	–	–	1	–	–	5	–	–	–	–	–	–	6	–	3	–
Chumparun	203	–	–	–	1	–	4	–	–	–	–	–	–	5	–	3	–
Mozufferpore	433	–	–	1	13	1	–	–	–	–	–	–	–	15	–	1	–
Chuprah	440	–	–	1	1	1	1	1	1	2	1	–	–	9	–	1	–
Ghazeepore	662	–	4	–	–	–	–	–	–	–	–	–	–	4	–	3	–
Benares	1,306	–	–	2	1	–	–	2	44	–	–	–	–	49	–	26	–
Mirzapore	351	–	2	–	–	–	–	–	–	–	–	1	1	4	–	1	–
Azimghur	358	–	–	–	–	–	4	–	–	–	–	–	–	4	–	1	–
Juanpore	269	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Goruckpore	727	–	–	–	2	3	20	11	6	–	–	–	–	42	–	19	–
Gondah	92	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Baraitch	107	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fyzabad	988	–	–	–	56	–	–	–	–	–	–	–	–	56	–	19	–
Sultanpore	528	–	–	–	–	49	5	–	–	–	–	–	–	54	–	18	–
Rae Bareilly	135	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pertabghur	162	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–
Hurdui	148	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Luckimpore	115	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lucknow	2,550	–	–	3	–	–	–	–	–	–	–	–	–	3	–	–	–
Seetapore	779	–	–	–	–	–	–	1	–	–	–	–	–	1	–	1	–
Etah	206	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–
Humeerpore	133	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Oraie	128	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Futtehghur	404	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cawnpore	279	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Banda	258	–	–	–	–	–	8	–	–	–	–	–	–	8	–	3	–
Nagode	116	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Allahabad	2,192	–	–	–	1	–	101	–	1	–	–	–	–	103	–	28	–
	15,450	–	6	10	101	56	148	15	53	2	1	1	1	394	2·55	136	8·80

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the Prevalence of Cholera in each Month, and the Distribution of the Disease, &c.—*continued.*

STATIONS.	Average Strength for the Year.	NUMBER OF ADMISSIONS INTO HOSPITAL IN EACH MONTH.												Total Admissions.	Admitted per Cent. of Average Strength.	Number of Deaths.	Died per 1,000 of Average Strength.
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Raipore	343	–	–	–	–	–	43	–	–	–	–	–	–	43	–	23	–
Belaspore	81	–	–	–	–	5	–	–	–	–	–	–	–	5	–	3	–
Bandhara	417	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Chanda	170	–	–	1	12	1	–	–	–	–	–	–	–	14	–	5	–
Nagpore	559	–	–	24	3	–	–	1	–	–	–	–	–	28	–	9	–
Chindwara	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kowtah	68	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sironcha	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mundla	59	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jubbulpore (Civil)	471	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jubbulpore (Thuggee)	565	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dumoh	207	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Saugor	348	–	–	–	–	–	–	17	23	3	3	–	–	46	–	16	–
Nursingpore	192	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lullutpore	259	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhansi	298	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Seonee	268	–	–	–	–	4	6	–	–	–	–	–	–	10	–	6	–
Baitool	163	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sehore	95	–	–	–	–	5	1	–	–	–	–	–	–	6	–	–	–
Hosingabad	272	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mundlaisir	148	–	–	–	–	3	–	–	–	–	–	–	–	3	–	1	–
Ajmere	229	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Beaur	103	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5,448	–	–	25	15	18	50	18	23	3	3	–	–	155	2·85	63	11·56
Muttra	243	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Agra	1,963	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Secundra	257	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Etawah	183	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mynpoorie	340	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Allyghur	165	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bolundshuhur	141	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Shahjehanpore	258	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bareilly	1,449	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Budaon	212	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Seharunpore	204	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bijnore	230	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Deyrah	67	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Almorah	130	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mozuffernuggur	97	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Moradabad	357	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–
Meerut	1,415	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	7,641	–	–	–	–	–	–	–	1	–	–	–	–	1	·01	–	–
Delhi	299	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rohtuk	218	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hissar	219	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sirsa	211	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kurnaul	48	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–
Umballa	866	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
Loodianah	745	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jullundur	332	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ferozepore	441	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Umritsur	554	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lahore	1,644	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lahore Female Gaol	168	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sealkote	191	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dhurmsalla	137	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Goordaspore	295	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Goojranwalla	330	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Goojrat	264	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Shahpore	239	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhelum	220	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Goojaira	315	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mooltan	653	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jhung	268	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera Ghazee Khan	42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera Ismael Khan	255	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Kohat	113	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bunnoo	91	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rawulpindee	763	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peshawur	308	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	9,630	–	–	–	1	–	–	–	–	–	–	–	–	1	·01	1	·10
BENGAL PRESIDENCY	52,598	6	53	175	382	155	234	52	88	11	12	25	12	1,206	2·29	450	8·56

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the MORTALITY in each GAOL, the CAUSES of DEATH, and the Ratio of DEATHS to STRENGTH.

STATIONS.	Average Strength for the Year.	CAUSES OF DEATHS IN HOSPITAL.															Died out of Hospital.	Total Number of Deaths.	DIED PER 1,000 OF AVERAGE STRENGTH.		
		Cholera.	Small-pox.	Fever.	Apoplexy.	Dysentery & Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy & Anæmia.	Wounds & Accidents.	All other Causes.			A. Cholera.	B. Out of Hospital.	C. All Causes.
Alipore	1,793	17	–	3	–	59	2	–	9	2	16	–	–	–	–	5	–	113	9·48	–	63·02
Baraset	139	–	–	1	–	5	–	1	1	–	–	–	–	–	1	–	–	9	–	–	64·75
Jessore	489	22	–	–	1	4	–	–	3	–	2	1	–	1	–	2	1	37	44·99	2·04	75·66
Kishnaghur	363	3	–	–	–	7	–	1	–	–	–	2	–	–	–	1	–	14	8·26	–	38·57
Moorshedabad	186	–	–	2	–	11	–	–	3	–	–	–	–	–	–	1	–	17	–	5·38	91·40
Howrah	127	1	–	1	–	3	–	1	–	–	–	–	–	–	–	–	–	6	7·87	–	47·24
Hooghly	451	7	–	4	–	20	–	–	–	–	3	1	–	–	–	–	–	35	15·52	–	77·61
Burdwan	411	4	–	2	–	10	–	–	–	–	–	1	–	4	–	1	1	23	9·73	2·43	55·96
Bancoorah	395	16	–	3	–	4	–	–	–	–	–	2	–	–	–	2	–	27	40·51	–	68·35
Purulea	183	–	–	–	–	1	–	–	–	–	1	1	–	3	–	1	–	7	–	–	38·25
Raneegunge	26	1	–	1	–	–	–	–	–	–	–	–	–	–	1	–	1	4	–	–	–
Sooree	285	–	–	–	1	1	–	–	–	–	2	–	–	3	–	–	1	8	–	3·51	28·07
Rajmehal	169	14	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	16	82·84	–	94·67
Deogurh	89	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	11·24
Malda	72	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	13·89
Dinagepore	462	37	–	–	1	34	–	1	2	–	1	2	–	–	–	–	–	78	80·09	–	168·83
Rampore Bauleah	394	18	–	–	–	8	1	–	1	–	–	2	–	–	1	1	–	32	45·69	–	81·22
Rungpore	323	1	–	2	–	10	–	1	3	–	–	6	–	3	1	1	–	28	3·10	–	86·69
Bograh	171	1	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	3	5·85	–	17·54
Mymensingh	474	–	2	3	1	16	–	–	–	1	1	5	–	2	–	2	–	33	–	–	69·62
Pubna	141	10	–	1	–	2	–	–	–	1	1	–	–	–	–	–	–	15	70·92	–	106·38
Furreedpore	410	1	–	1	1	2	–	–	2	–	3	–	–	2	–	1	1	14	2·44	2·44	34·15
Backergunge	495	17	–	2	1	61	–	–	4	–	–	3	–	4	1	4	–	97	34·34	–	195·96
Noacolly	224	2	–	1	–	2	–	–	–	–	–	–	–	–	–	2	–	7	8·93	–	31·25
Chittagong	327	–	–	1	–	–	3	–	–	–	1	2	–	–	–	–	–	7	–	–	21·41
Tipperah	398	1	–	–	–	2	–	–	2	–	–	–	–	3	1	1	–	10	2·51	2·51	25·12
Dacca	463	1	4	2	–	2	–	–	–	–	2	–	–	1	–	2	–	14	2·16	–	30·24
Sylhet	359	–	–	–	–	4	–	–	1	–	2	–	–	–	–	–	–	7	–	–	19·50
Cherrapoonjee	17	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Cachar	211	7	–	–	–	9	–	–	–	–	–	2	–	–	–	3	–	21	33·18	–	99·53
Gowalparah	149	2	–	1	–	1	–	–	2	–	–	3	–	2	–	1	–	12	13·42	–	80·54
Gowhatty	153	2	–	–	–	7	–	–	1	–	1	–	–	–	–	1	–	11	13·07	–	71·90
Seebsagur	123	–	–	1	–	4	–	–	–	–	–	–	–	4	–	–	–	9	–	–	73·17
Nowgong	92	–	–	–	–	2	–	–	–	–	–	1	–	–	–	–	–	3	–	–	32·61
Tezpore	198	–	–	–	–	5	–	–	1	–	–	–	–	1	–	–	–	7	–	–	35·35
Debrooghur	125	–	–	–	–	8	–	–	–	1	–	4	–	–	–	–	–	13	–	–	104·00
Midnapore	544	4	–	2	1	2	–	–	1	–	2	–	–	–	–	1	2	15	7·35	3·67	27·57
Balasore	210	–	–	–	–	3	1	–	2	–	–	–	–	–	–	1	1	7	–	4·76	33·33
Cuttack	353	3	–	1	–	8	–	–	2	–	2	–	–	7	–	4	–	27	8·50	–	76·49
Pooree	32	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sumbulpore	175	46	–	2	–	9	–	–	1	–	–	–	–	–	–	–	–	58	262·86	–	331·43
Chyebassa	215	–	–	2	–	6	–	–	–	–	1	1	–	–	–	1	–	11	–	–	51·16
Ranchee	290	–	–	5	1	–	–	–	–	–	1	1	–	–	–	–	–	8	–	–	27·59
Hazareebaugh	439	–	–	–	–	5	–	–	2	–	4	2	–	–	–	–	–	13	–	–	29·61
Monghyr	362	–	–	2	–	12	–	–	–	1	–	1	–	–	–	–	–	16	–	–	44·20
Bhaugulpore	359	10	–	1	–	10	–	–	–	–	–	–	–	1	–	–	–	22	27·85	–	61·28
Purneah	522	–	–	5	1	29	–	2	3	–	2	2	–	–	–	3	–	47	–	–	90·04
Darjeeling	51	2	–	1	–	1	–	–	–	–	–	–	–	–	1	–	–	5	39·22	–	98·04
	14,441	250	6	54	9	390	7	7	47	7	50	45	–	41	6	40	10	969	17·31	·69	67·10
Gyah	339	1	–	–	–	4	–	–	2	–	–	–	1	–	–	1	1	10	2·95	2·95	29·50
Patna	467	8	1	5	–	16	–	1	1	–	–	–	–	1	–	–	1	34	17·13	2·14	72·80
Deegah	79	–	–	–	–	3	–	–	–	–	–	1	–	–	–	1	–	5	–	–	63·29
Arrah	499	3	–	1	–	24	–	–	1	–	–	–	1	–	–	1	–	31	6·01	–	62·12
Chumparun	203	3	–	2	–	5	–	–	–	–	–	–	–	3	–	1	–	14	14·78	–	68·97
Mozufferpore	433	1	–	–	–	18	–	–	1	–	–	–	–	3	–	1	–	24	2·31	–	55·43
Chuprah	440	1	–	–	–	29	–	–	–	–	–	–	–	–	–	1	1	32	2·27	2·27	72·72
Ghazeepore	662	3	–	1	–	3	–	–	1	–	–	1	–	–	–	–	–	9	4·53	–	13·60
Benares	1,306	26	1	–	2	33	–	2	6	–	19	–	–	–	–	13	–	102	19·91	–	98·10
Mirzapore	351	1	1	3	2	6	–	–	–	–	–	–	–	2	–	2	–	17	2·85	–	48·43
Azimghur	358	1	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	3	2·79	–	8·35
Juanpore	269	–	–	2	–	5	–	–	–	–	–	–	–	1	–	1	–	9	–	–	33·46
Coruckpore	727	19	–	3	1	55	–	1	–	–	1	–	–	5	–	4	–	89	26·13	–	122·42
Gondah	92	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Baraitch	107	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fyzabad	988	19	–	2	–	31	–	–	–	–	–	–	–	–	–	–	–	52	19·23	–	52·63
Sultanpore	522	18	–	3	1	5	–	1	1	–	–	–	–	–	1	3	–	33	34·09	–	62·50
Rae Bareilly	135	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	7·41
Pertabghur	162	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	6·17
Hurdui	148	–	–	–	–	2	–	–	–	–	–	1	–	–	1	1	–	5	–	–	33·78
Luckimpore	115	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	8·70
Lucknow	2,550	–	–	30	–	239	–	2	6	–	1	–	–	–	1	20	–	299	–	–	113·33
Seetapore	779	1	–	17	–	46	–	–	2	–	–	–	–	1	–	15	2	84	1·28	2·56	107·83
Etah	206	–	–	–	–	–	–	–	–	–	1	–	–	–	2	1	–	4	–	–	19·42
Humeerpore	133	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	7·52
Oraie	128	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	1	3	–	7·81	23·44
Futtehghur	404	–	–	55	1	3	–	–	2	–	–	1	–	–	–	1	1	64	–	2·48	158·42
Cawnpore	279	–	–	12	–	–	–	–	–	–	–	–	–	–	–	1	–	13	–	–	46·59
Banda	258	3	–	–	1	2	–	1	1	–	1	–	–	–	–	3	–	12	11·63	–	46·51
Nagode	116	–	–	4	–	–	–	–	1	–	–	–	–	–	–	–	–	5	–	–	43·10
Allahabad	2,192	28	–	6	3	28	1	2	5	–	4	–	–	2	–	8	–	87	12·77	–	39·69
	15,450	136	3	147	12	560	1	10	30	–	27	4	2	19	5	81	7	1,044	8·80	·45	67·57

3.—GAOLS OF THE BENGAL PRESIDENCY, 1864—*continued.*

TABLE showing the MORTALITY in each GAOL, the CAUSES of DEATH, and the Ratio of DEATHS to STRENGTH.

STATIONS.	Average Strength.	CAUSES OF DEATH IN HOSPITAL.															Died out of Hospital.	Total Number of Deaths.	DIED PER 1,000 OF AVERAGE STRENGTH.		
		Cholera.	Small-pox.	Fevers.	Apoplexy.	Dysentery & Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Disease.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.			(A.) Cholera.	(B.) Sudden Deaths out of Hospital.	(C.) All Causes.
Raipore	343	23	–	33	–	19	–	–	1	–	–	–	–	4	–	2	–	82	67·06	–	239·07
Belaspore	81	3	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	5	37·04	–	61·73
Bandhara	417	–	–	2	–	22	–	–	–	–	–	–	–	2	–	1	1	28	–	2·40	67·15
Chanda	170	5	–	1	–	2	–	–	–	–	–	–	–	2	–	2	–	12	29·41	–	70·59
Nagpore	559	9	–	4	–	13	–	–	3	–	–	–	1	–	–	2	–	32	16·10	–	57·25
Chindwara	100	–	–	–	–	5	–	–	1	–	–	–	–	–	–	1	–	7	–	–	70·00
Kowtah	68	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	14·71
Sironcha	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mundla	59	–	–	2	–	2	–	–	–	–	–	–	–	–	–	–	–	4	–	–	67·80
Jubbulpore (Civil)	471	–	–	4	–	4	–	–	3	–	–	–	–	–	–	2	–	13	–	–	27·60
Jubbulpore (Thuggee)	565	–	–	–	–	–	–	–	2	–	–	–	–	1	–	1	–	4*	–	–	–
Dumoh	207	–	–	–	–	2	–	–	1	–	–	–	–	–	–	1	–	4	–	–	19·32
Saugor	348	16	–	–	–	2	–	–	3	–	1	–	–	1	–	–	–	23	45·98	–	66·09
Nursingpore	192	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	2	–	–	10·42
Lullutpore	259	–	–	–	–	4	–	–	–	–	–	–	–	–	–	–	1	5	–	3·86	19·30
Jhansi	298	–	–	–	–	1	–	1	–	–	–	–	–	–	–	1	–	3	–	–	10·07
Seonee	268	6	–	5	–	11	–	–	1	–	–	–	–	–	–	1	–	24	22·39	–	89·55
Baitool	163	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	2	–	–	12·27
Sehore	95	–	–	–	–	1	–	–	1	–	–	–	–	–	–	–	–	2	–	–	21·05
Hosungabad	272	–	–	1	–	4	–	–	1	–	–	–	–	–	–	–	–	6	–	–	22·06
Mundlaisir	148	1	–	1	–	2	–	–	–	–	1	–	–	–	–	–	–	5	6·76	–	33·78
Ajmere	229	–	–	2	–	11	–	–	1	–	–	–	–	–	–	–	–	14	–	–	61·14
Beaur	103	–	–	1	–	1	–	–	–	–	–	–	–	1	1	–	–	4	–	–	39·42
	5,448	63	1	57	–	110	–	1	18	–	2	–	1	11	1	15	2	282	11·56	·36	51·76
Muttra	243	–	–	3	–	3	–	–	2	–	–	–	–	–	–	–	–	8	–	–	32·92
Agra	1,993	–	–	280	2	29	–	–	2	–	1	1	–	17	–	24	2	358	–	1·00	179·63
Secundra	257	–	–	66	–	5	–	–	2	–	1	–	–	1	–	1	–	76	–	–	295·72
Etawah	183	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	5·46
Mynpoorie	340	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	2	–	4·17	8·34
Allyghur	165	–	–	1	–	–	*	–	–	–	1	–	–	–	–	3	1	6	–	6·06	36·36
Bolundshuhur	141	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	14·18
Shahjehanpore	258	–	–	3	–	1	–	–	1	–	–	–	–	–	–	1	–	6	–	–	23·26
Bareilly	1,449	–	–	6	–	5	–	–	2	–	–	–	–	1	–	5	–	19	–	–	13·11
Budaon	212	–	–	4	–	–	–	–	–	–	–	–	–	1	1	–	–	6	–	–	28·30
Scharunpore	204	–	–	–	–	1	–	–	1	–	–	–	–	1	–	–	–	3	–	–	14·61
Bijnore	230	–	–	–	–	1	–	–	1	–	–	–	–	–	–	1	–	3	–	–	13·04
Deyrah	67	–	–	1	–	3	–	–	–	–	–	–	–	–	–	–	–	4	–	–	59·70
Almorah	130	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	7·69
Mozuffernuggur	97	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	10·31
Moradabad	357	–	–	10	–	2	1	–	2	–	–	1	–	3	2	2	–	23	–	–	64·43
Meerut	1,415	–	–	12	–	14	–	–	7	1	–	–	1	–	1	13	3	52		2·12	36·75
	7,641	–	–	387	3	65	1	–	20	1	3	2	1	24	5	52	7	571	–	·92	74·73
Delhi	299	–	–	24	–	3	–	1	1	–	–	–	–	1	–	1	1	32	–	3·35	107·02
Rohtuk	218	–	–	2	–	1	–	–	1	–	–	–	–	–	–	1	–	5	–	–	22·94
Hissar	219	–	–	1	–	1	–	–	1	–	–	–	–	–	–	–	–	3	–	–	13·17
Sirsa	211	–	–	2	–	1	–	–	–	–	–	–	–	–	1	–	–	4	–	–	18·96
Kurnaul	48	–	–	2	–	–	–	–	1	–	–	–	–	–	–	1	–	4	–	–	–
Umballa	866	1	–	158	5	55	1	–	8	1	1	–	–	24	1	11	–	266	1·15	–	307·16
Loodianah	145	–	–	1	–	2	–	–	–	–	–	–	–	–	–	–	–	3	–	–	20·69
Jullundur	332	–	–	–	–	1	–	–	–	–	–	–	–	–	–	2	1	4	–	3·01	12·05
Ferozepore	441	–	–	1	–	1	–	–	–	–	–	–	–	–	–	2	–	4	–	–	9·07
Umritsur	554	–	–	51	2	10	–	–	2	1	1	–	–	–	2	8	–	77	–	–	138·99
Lahore	1,644	–	–	144	1	10	–	1	8	–	3	1	–	11	2	–	1	182	–	·61	110 71
Lahore Female Gaol	168	–	–	8	–	3	–	–	–	–	–	–	–	1	–	2	–	14	–	–	83·33
Sealkote	191	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	5·24
Dhurmsalla	137	–	–	–	–	1	–	–	1	–	1	–	–	–	–	1	–	4	–	–	29·20
Goordaspore	295	–	–	4	–	–	–	–	–	–	–	–	–	–	–	3	–	7	–	–	23·73
Goojranwalla	330	–	–	26	–	21	–	1	2	1	1	–	–	–	–	5	–	57	–	–	172·73
Goojrat	264	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	3·79
Shahpore	239	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	4·18
Jhelum	220	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	4·55
Goojaira	315	–	–	2	–	1	–	–	3	–	–	–	–	2	–	1	–	9	–	–	28·57
Mooltan	653	–	–	52	–	11	–	–	1	–	–	–	–	3	1	4	1	73	–	1·53	111·79
Jhung	268	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera Ghazee Khan	42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dera Ismael Khan	255	–	–	–	–	1	–	–	1	–	–	–	–	–	–	1	–	3	–	–	11·76
Kohat	113	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	8·85
Bunnoo	91	–	–	2	1	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	32·97
Rawul Pindee	763	–	–	37	–	10	–	–	3	–	1	–	–	4	–	3	–	58	–	–	76·02
Peshawur	308	–	–	–	–	5	–	–	–	–	–	–	2	–	1	1	–	9	–	–	29·22
	9,630	1	–	518	9	139	1	3	34	3	8	1	2	46	8	48	5	826	·10	·52	85·77
BENGAL PRESIDENCY	52,598	450	10	1163	33	1264	10	21	149	11	90	52	6	141	25	236	31	3,692	8·56	·59	70·19

* Not including men who died who were not under treatment in Hospital.

4.—SUMMARY FOR 1864.

DETAIL of ADMISSIONS and DEATHS of EUROPEAN SOLDIERS, and WOMEN and CHILDREN of EUROPEAN REGIMENTS the NATIVE ARMY, and the GAOL POPULATION of the *Bengal* PRESIDENCY.

CAUSES OF ADMISSIONS AND DEATHS.	ADMITTED INTO HOSPITAL, AND DIED IN AND OUT OF HOSPITAL.									
	EUROPEANS.						NATIVES.			
	Soldiers. Average strength 40,385 Admitted - - 66,842 *Died* - - - *852*		Women. Average strength 2,700 Admitted - - 3,084 *Died* - - - *102*		Children. Average strength 4,120 Admitted - - 3,481 *Died* - - - *294*		Native Army. Average strength 37,225 Admitted - - 52,006 *Died* - - - *489*		Prisoners. Average strength 52,598 Admitted - - 64,392 *Died* - - - *3,692*	
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*
Variola et Varioloides	94	*14*	9	*1*	12	*3*	50	*11*	576	*10*
Varicella	4	–	1	–	9	*1*	5	–	383	–
Scarlatina	–	–	1	*1*	1	–	1	–	–	–
Morbilli	16	–	3	–	176	*18*	17	–	27	–
Pertussis	–	–	–	–	19	*4*	–	–	–	–
Diphtheria	–	–	–	–	2	*1*	–	–	–	–
Tonsillitis	717	–	26	–	23	–	77	–	52	*1*
Cynanche Trachealis	–	–	–	–	13	*6*	–	–	–	–
Parotitis	32	–	1	–	4	–	54	–	69	*3*
Febris Intermittens	17,492	*41*	627	*6*	617	*11*	25,254	*83*	21,878	*358*
„ Remittens	1,702	*52*	91	*7*	83	*9*	647	*51*	3,138	*497*
„ Continua	2,782	*34*	140	*2*	158	*4*	126	*8*	2,055	*292*
Ophthalmia	1,757	–	254	–	858	–	1,023	–	1,065	*13*
Erysipelas	70	*1*	7	–	–	–	19	*1*	67	*17*
Erythema	16	–	–	–	–	–	9	–	3	–
Anthrax	9	*1*	1	–	–	–	13	*1*	46	*2*
Furunculus	577	–	–	–	12	–	196	–	88	–
Pyæmia	–	–	–	–	–	–	–	–	1	*1*
Gangroena	–	–	–	–	–	–	2	*2*	18	*5*
Phagedæna	–	–	–	–	–	–	1	*1*	–	–
Cancrum Oris	–	–	–	–	1	*1*	–	–	–	–
Influenza	151	–	2	–	3	–	116	–	38	–
Dysenteria Acuta	1,212	*55*	104	*8*	106	*14*	2,745	*43*	5,642	*669*
„ Chronica	233	*11*								
Diarrhœa	4,020	*27*	270	*15*	590	*67*	2,247	*44*	6,013	*595*
Cholera (and Choleraic Diarrhœa)	175	*103*	31	*19*	22	*18*	143	*63*	1,211	*450*
Rheumatismus	2,963	*3*	43	–	6	–	1,932	*3*	1,408	*14*
Syphilis Primaria	3,532	–	–	–	–	–	713	–	500	*1*
„ Secundaria	1,290	*10*	4	–	3	–	263	*1*	197	*5*
Iritis Syphilitica	49	–	–	–	–	–	7	–	6	–
Gonorrhœa	3,492	–	–	–	1	–	361	–	123	–
Balanitis	11	–	–	–	–	–	2	–	–	–
Bubo	1,446	–	–	–	–	–	380	–	153	*1*
Orchitis	256	–	–	–	–	–	101	–	45	*1*
Phymosis	53	–	–	–	–	–	19	–	48	–
Verrucæ	40	–	–	–	–	–	–	–	–	–
Condyloma	18	–	–	–	–	–	2	–	–	–
Lepra	–	–	–	–	–	–	–	–	103	*6*
Hydrophobia	3	*3*	–	–	–	–	2	*2*	1	*1*
Elephantiasis	–	–	–	–	–	–	–	–	18	–
Scorbutus et purpura	37	*2*	–	–	1	–	39	*1*	158	*6*
Ebriositas	479	*4*	8	*1*	–	–	7	–	–	–
Bronchocele	–	–	–	–	–	–	8	–	10	–
Aphthæ	5	–	–	–	5	–	6	–	16	–
Porrigo	10	–	–	–	1	–	8	–	20	–
Scabies	73	–	–	–	7	–	880	–	1,720	*1*
Vermes	40	–	1	–	5	–	21	–	24	–
„ Tænia	249	–	8	–	18	–	3	–	6	–
„ Dracunculus	1	–	–	–	–	–	33	–	132	–
Anœmia	155	*2*	136	*1*	83	*8*	40	–	180	*25*
Anasarca	27	*1*	3	–	–	–	17	*5*	157	*37*
Scirrhoma	4	*2*	4	–	–	–	1	*1*	7	*5*
Podagra	4	–	–	–	–	–	–	–	–	–
Lupus	10	–	–	–	–	–	–	–	1	–
Scrofula	86	*1*	1	–	7	–	11	*1*	39	*4*
Tabes Mesenterica	–	–	–	–	9	*8*	–	–	–	–
Phthisis Pulmonalis	339	*64*	14	*10*	3	*1*	35	*20*	152	*88*
Hœmoptysis	91	*1*	–	–	–	–	12	–	63	*2*
Morbus Coxæ	1	–	–	–	–	–	–	–	–	–
Abscessus Psoanus	2	*2*	–	–	–	–	–	–	3	*1*
Meningitis	10	*4*	–	–	5	*5*	–	–	2	*2*
Myelitis	1	–	–	–	–	–	–	–	1	*1*
Encephalitis	1	*2*	–	–	–	–	–	–	2	*3*
Hydrocephalus	–	–	–	–	12	*7*	–	–	–	–
Apoplexia et insolatio	102	*67*	5	*3*	1	–	10	*6*	52	*38*
Paralysis	89	*12*	4	–	–	–	26	*2*	48	*10*
Mania	42	–	2	*1*	–	–	29	–	266	*9*
Melancholia	5	–	–	–	–	–	–	–	–	–
Dementia	84	*1*	–	–	–	–	3	–	15	*2*
Chorea	4	–	–	–	–	–	–	–	5	–
Hysteria	–	–	15	–	2	–	–	–	5	–
Convulsio	–	–	–	–	41	*29*	–	–	–	–
Epilepsia	148	*6*	2	*1*	–	–	22	–	90	*6*
Tetanus	1	*1*	–	–	–	–	2	*2*	8	*4*

Note.—The words and figures printed in *italics* were printed in red in the original.

4.—SUMMARY FOR 1864—*continued.*

DETAIL of Admissions and Deaths of European Soldiers, &c., of the *Bengal* Presidency—*continued.*

CAUSES OF ADMISSIONS AND DEATHS.	ADMITTED INTO HOSPITAL, AND DIED IN AND OUT OF HOSPITAL.									
	EUROPEANS.						NATIVES.			
	Soldiers.		Women.		Children.		Native Army.		Prisoners.	
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	Died.	Admitted.	*Died.*
Delirium Tremens	144	*16*	2	*1*	–	–	6	–	4	–
Cephalœa	398	–	6	–	–	–	54	–	114	–
Dysecœa	21	–	–	–	–	–	6	–	1	–
Neuralgia	214	–	12	–	–	–	73	–	76	–
Odontalgia	6	–	–	–	–	–	15	–	68	–
Otitis	339	–	4	–	5	–	231	–	191	–
Amaurosis	11	–	–	–	–	–	3	–	17	–
Nyctalopia	–	–	–	–	–	–	8	–	–	–
Pericarditis	28	*2*	–	*1*	–	–	3	*1*	8	*4*
Morbus Cordis	252	*26*	4	*2*	–	–	7	*5*	10	*12*
Palpitatio	41	–	–	–	–	–	1	–	–	–
Aneurisma	18	*14*	1	–	–	–	1	*3*	2	*1*
Angina Pectoris	29	–	–	–	–	–	–	–	–	–
Syncope	13	–	1	–	–	–	1	–	–	–
Varix	30	–	–	–	–	–	2	–	–	–
Epistaxis	18	–	–	–	–	–	5	–	12	*1*
Phlebitis	1	–	–	–	–	–	–	–	6	–
Laryngitis	16	*1*	1	–	4	*1*	7	*1*	14	*3*
Bronchitis	2,032	*19*	30	*1*	88	*11*	809	*27*	877	*40*
Pleuritis	164	*4*	6	–	2	–	127	*7*	248	*8*
Pneumonia	125	*17*	–	–	9	*6*	162	*30*	291	*83*
Asthma	38	*1*	2	–	1	–	93	*3*	190	*13*
Stomatitis	12	–	3	–	–	–	22	*1*	45	*1*
Gastritis	35	*2*	7	*1*	–	–	–	–	11	*3*
Enteritis	15	*5*	2	*1*	2	*1*	8	*1*	12	*4*
Peritonitis	27	*10*	–	–	1	–	5	*2*	12	*7*
Obstipatio	160	–	9	–	4	–	71	–	560	*2*
Ileus	–	–	–	–	–	–	3	*2*	1	*1*
Hernia	39	*1*	–	–	2	–	23	*1*	19	*1*
Dyspepsia	1,125	*2*	171	–	16	–	373	*1*	673	*3*
Colica	638	–	50	–	6	–	622	–	1,335	*5*
Hæmatemesis	13	*2*	–	–	–	–	9	–	5	*1*
Melæna	–	–	–	–	–	–	–	–	4	–
Hæmorrhois	406	–	8	–	2	–	116	–	165	–
Fistula in Ano	55	–	–	–	2	–	19	–	22	–
Splenitis	417	*2*	14	–	4	–	250	*5*	324	*20*
Hepatitis Acuta	1,297	*49*	62	*5*	6	*2*	64	*4*	78	*10*
" Chronica	1,081	*70*					–	–	1	*1*
Cirrhosis	–	*1*	–	–	–	–	78	*2*	120	*22*
Icterus	220	*3*	4	–	4	–	3	*1*	32	*15*
Ascites	9	*1*	1	–	–	–	32	*1*	54	*38*
Nephritis	56	*3*	5	–	–	–	3	–	8	*1*
Hæmaturia	9	–	–	–	–	–	4	–	11	*1*
Ischuria	25	*1*	–	–	1	–	1	–	3	–
Diuresis	12	–	–	–	–	–	2	–	–	–
Eneuresis	9	–	–	–	–	–	6	*1*	4	–
Cystitis	14	–	–	–	1	–	–	–	9	*1*
Calculus Vesicæ	3	–	–	–	–	–	16	–	29	*2*
Strictura Urethræ	135	*1*	–	–	–	–	1	–	–	*3*
Fistula in Perineo	8	–	–	–	1	–	–	–	–	–
Phymosis	–	–	–	–	–	–	2	–	5	–
Varicocele	6	–	–	–	–	–	113	–	73	–
Orchitis	751	–	–	–	–	–	18	–	54	–
Hydrocele	27	–	–	–	–	–	–	–	–	–
Ovaritis	–	–	2	–	–	–	–	–	4	–
Hysteritis	–	–	1	*1*	–	–	–	–	–	–
Polypus Uteri	–	–	6	–	–	–	–	–	–	–
Leucorrhœa	–	–	7	–	1	–	–	–	–	–
Lumbago	95	–	–	–	–	–	146	–	70	–
Pleurodynia	20	–	–	–	–	–	5	–	11	–
Arthritis	34	–	–	–	–	–	6	–	5	–
Synovitis	98	–	–	–	2	–	8	–	40	–
Contractura	6	–	–	–	–	–	–	–	–	–
Periostitis	118	–	–	–	–	–	7	–	6	–
Exostosis	8	–	–	–	–	–	4	–	–	–
Caries	6	–	–	–	–	–	5	–	10	–
Necrosis	15	–	–	–	–	–	8	*1*	6	–
Phlegmon and Abscess	2,110	*1*	52	–	53	–	2,535	*4*	4,175	*10*
Whitlow	178	–	–	–	–	–	67	–	131	–
Ulcer	2,371	–	19	–	20	–	3,287	*2*	3,021	*29*
Skin Diseases	394	–	2	–	17	–	501	–	515	–
Tumour	27	–	2	–	–	–	16	–	12	–
Dentition	–	–	–	–	178	*34*	–	–	–	–
Harelip	–	–	–	–	1	–	–	–	–	–
Childbirth	–	–	526	*8*	–	–	–	–	59	*3*
Abortion	–	–	41	*1*	–	–	–	–	10	–
Diseases of Menstruation	–	–	53	*1*	2	–	–	–	12	*1*
Atrophy and Debility	356	*12*	89	*2*	73	*15*	334	*7*	391	*118*
Burning and Explosion	88	*5*	–	–	–	–	–	–	74	*1*
Asphyxia	–	*1*	–	–	–	–	–	–	–	–

4.—SUMMARY FOR 1864—*continued.*

DETAIL of Admissions and Deaths of European Soldiers, &c., of the *Bengal* Presidency—*continued.*

CAUSES OF ADMISSIONS AND DEATHS.	ADMITTED INTO HOSPITAL, AND DIED IN AND OUT OF HOSPITAL.									
	EUROPEANS.						NATIVES.			
	Soldiers.		Women.		Children.		Native Army.		Prisoners.	
	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*	Admitted.	*Died.*
Dislocation	51								15	–
Subluxation	758								33	–
Fracture	177								184	*10*
Contusion	2,526	*22*	62	–	54	*1*	3,630	*8*	1,400	*12*
Concussion of Brain	12								1	*1*
Amputation	13								–	–
Incised Wound	349								235	*3*
Gunshot wound	50	–	–	–	–	–	145	*2*	13	–
Killed in action	–	*3*	–	–	–	–	–	*2*	–	–
Poisoning	2	*1*	–	–	–	–	5	–	7	*2*
Snake-bite	–	–	–	–	–	–	4	*1*	–	–
Struck by Lightning	2	–	–	–	–	–	–	–	–	–
Drowned	–	*13*	–	–	–	–	–	*5*	–	*4*
Suicide	–	*12*	–	–	–	–	3	*4*	–	*8*
Homicide	–	*1*	–	–	–	–	–	*2*	–	*2*
Punished	48	–	–	–	–	–	–	–	–	–
Disease not specified	76	1	4	–	–	–	72	–	–	–

RATIOS of ADMISSIONS and DEATHS.

CAUSES OF ADMISSIONS AND DEATHS.	ADMITTED PER CENT. OF THE AVERAGE STRENGTH.					*DIED PER 1,000 OF THE AVERAGE STRENGTH.*				
	EUROPEANS.			NATIVES.		*EUROPEANS.*			*NATIVES.*	
	Soldiers.	Women.	Children.	Native Army.	Prisoners.	*Soldiers.*	*Women.*	*Children.*	*Native Army.*	*Prisoners.*
Cholera	·37	1·15	·54	·38	2·29	*2·56*	*7·04*	*4·87*	*1·67*	*8·56*
Small-pox	·22	·33	–	·12	1·09	*·35*	*·37*	–	*·30*	*·19*
Eruptive Diseases of Children	–	–	4·81	–	–	–	–	*5·34*	–	–
Throat Diseases of Children	–	–	1·48	–	–	–	–	*2·67*	–	–
Fevers, Intermittent	43·46	31·78	20·83	69·38	51·43	*3·14*	*5·56*	*8·25*	*3·84*	*22·11*
Fevers, Remittent and Continued	10·77									
Apoplexy	·22	·19	–	0·3	·09	*1·65*	*1·11*	–	*·13*	*·63*
Head Affections of Children	–	–	1·41	–	–	–	–	*9·95*	–	–
Delirium Tremens	·36	–	–	·01	–	*·40*	–	–	–	–
Dysentery	3·57	13·85	16·89	13·72	22·16	*2·30*	*8·52*	*19·66*	*2·29*	*24·03*
Diarrhœa	9·82									
Hepatitis	5·63	2·30	·15	·16	·14	*2·95*	*1·85*	*·49*	*·10*	*·19*
Spleen Disease	1·01	–	–	·67	·62	*·05*	–	–	*·13*	*·40*
Respiratory Diseases	7·96	1·44	2·52	3·66	3·05	*1·01*	*·37*	*4·37*	*1·83*	*2·83*
Heart Diseases	–	·19	–	–	–	*·99*	*1·11*	–	*·24*	–
Phthisis Pulmonalis	·79	·52	–	·09	·29	*1·61*	*3·70*	–	*·54*	*1·71*
Scrofulous Affections of Children	–	–	·46	–	–	–	–	*1·70*	–	–
Dropsy	–	–	–	–	·36	–	–	–	*·13*	*·99*
Atrophy and Anæmia	–	8·33	3·79	–	1·07	–	*1·11*	*5·58*	*·18*	*2·68*
Scurvy	·09	–	–	·09	·30	*·05*	–	–	*·03*	*·11*
Rheumatism	8·41	1·59	–	5·67	2·81	–	–	–	–	–
Venereal Diseases	25·49	–	–	4·94	2·09	–	–	–	–	–
Eye Diseases	4·29	9·41	20·83	2·62	2·05	–	–	–	–	–
Diseases special to Women	–	2·63	–	–	–	–	*·74*	–	–	–
Childbirth and Abortion	–	21·00	–	–	–	–	*3·34*	–	–	–
Dentition	–	–	4·32	–	–	–	–	*8·25*	–	–
Abcess and Ulcer	13·04	2·63	1·77	14·94	14·04	–	–	–	–	–
Wounds and Accidents	10·51	2·30	1·31	11·98	3·72	*·40*	–	*·24*	*·29*	*·48*
All other Causes	18·15	14·59	3·38	10·41	15·13	*2·36*	*2·96*	*·49*	*1·05*	*4·69*
Died out of Hospital	–	–	–	–	–	*1·29*	–	–	*·38*	*·39*
All Causes	164·16	114·23	84·49	138·87	122·73	*21·40*	*37·78*	*71·36*	*13·13*	*70·19*

DISTRIBUTION of the EUROPEAN ARMY of the BENGAL PRESIDENCY on 1st July 1864.

Strength of the Army on 1st July 1864, 40,458.

ARTILLERY:	Station.	Strength.
Artillery Regimental Band	Meerut	40
C. Royal Horse Brigade A. Battery	Morar	138
B. "	Benares	131
C. "	Meerut	137
D. "	Meerut	135
E. "	Rawulpindee	143
F. "	Lucknow	141
F. Royal Horse Brigade A. Battery	Umballa	133
B. "	Peshawur	144
C. "	Umballa	131
D. "	Peshawur	134
E. "	Meean Meer	141
F. "	Sealkote	128
11th Brigade Royal Atillery A. Battery	Fyzabad	145
B. "	Lucknow	141
C. "	Seetapore	146
D. "	Bareilly	138
E. "	Futtehghur	170
F. "	Delhi	140
G. "	Cawnpore	149
16th Brigade Royal Artillery A. Battery	Saugor	132
B. "	Jubbulpore	138
C. "	Hazareebaugh	139
D. "	Dinapore	124
E. "	Allahabad	131
F. "	Barrackpore	135
G. "	Barrackpore	131
19th Brigade Royal Artillery A. Battery	Ferozepore	124
B. "	Mooltan	122
C. "	Umritsur	130
D. "	Rawulpindee	129
E. "	Jullundur	116
F. "	Meean Meer	125
G. "	Peshawur	125
22d Brigade Royal Artillery A. Battery	Meerut	137
B. "	Jhansi	118
3 "	Morar	62
4 "	Meerut	61
E. "	Morar	138
F. "	Agra	132
G. "	Meerut	133
24th Brigade Royal Artillery 1 Battery	Fort Govinghu	35
2 "	Meean Meer	60
3 "	Peshawur	73
4 "	Attock	47
5 "	Lucknow	79
6 "	Mooltan	58
25th Brigade Royal Artillery 1 Battery	Delhi	33
2 "	Saugor	55
3 "	Fort William	41
	Berhampore	21
4 "	Allahabad	64
5 "	Agra	42
6 "	Benares	58
Armstrong M. T. Battery	Peshawur	70
Garrison Battery No. 1	Lucknow	35
" No. 2	Fort Lahore	28
Sappers and Miners	Roorkee	91

CAVALRY:		
2d Dragoon Guards	Benares	286
"	Cawnpore	132
5th Lancers	Lucknow	505
7th Hussars	Campbellpore	379
"	Rawulpindee	132
7th Dragoon Guards	Muttra	505
19th Hussars	Meerut	491
20th "	Sealkote	497
21st "	Umballa	530

INFANTRY:			Station.	Strength.
H.M.'s	7th	Fusiliers	Ferozepore	861
	18th	Regiment	Jullundur	812
	20th	"	Roorkee	458
	"	"	Futtehghur	383
	23d	"	Agra	849
	27th	"	Dinapore	839
	34th	"	Seetapore	418
	"	"	Rae Bareilly	330
	35th	"	Fyzabad	832
	36th	"	Lucknow	842
	38th	"	Delhi	764
	42d	"	Dugshaie	801
	46th	"	Shahjehanpore	557
	"	"	Moradabad	342
	48th	"	Dum-Dum	606
	"	"	Darjeeling	228
	51st	"	Nowshera	819
	"	"	Fort Attock	105
	52d	"	Fort William	777
	54th	"	Benares	481
	"	"	Azimghur	199
	"	"	Juanpore	150
	55th	"	Hazareebaugh	800
	"	"	Berhampore	181
	71st	"	Peshawur	747
	77th	"	Allahabad	631
	79th	"	Rawulpindee	533
	"	"	Murree Hills	300
	80th	"	Jhansi	543
	"	"	Fort Gwalior	220
	"	"	Seepree	150
	81st	"	Morar	790
	82d	"	Subathoo	891
	88th	"	Cawnpore	881
	89th	"	Mooltan	727
	"	"	Dera Ismael Khan	101
	90th	"	Meean Meer	582
	"	"	Fort Lahore	105
	91st	"	Jubbulpore	628
	"	"	Nagode	199
	93d	"	Sealkote	823
	94th	"	Kussowlie	258
	"	"	Kangra	129
	"	"	Phillour	106
	"	"	Umritsur	370
	97th	"	Saugor	650
	"	"	Nowgong	206
	98th	"	Umballa	907
	101st	"	Rawulpindee	533
	"	"	Murree Hills	299
	104th	"	Bareilly	752
	107th	"	Lucknow	850
	2d Bat. Rifle Brigade		Meerut	847
	3d	" "	Peshawur	930

CONVALESCENT DEPOTS.		
"	Darjeeling	143
"	Nynee Tal	277
"	Landour	212
"	Dugshaie	49
"	Kussowlie	399
"	Murree	350
"	Nundcote	6

GENERAL HOSPITALS.		
"	Allahabad	44
"	Kidderpore	68
"	Ship "Bentinck"	105
	Chinsurah Depôt	48

RESOLUTION of the Governor General of India in Council, dated 15th December 1865.

THE Right Honourable the Governor General in Council has perused this the First Annual Report of the Commission with much interest and satisfaction, and values greatly the practical and judicious remarks and suggestions on many sanitary questions which it contains. He desires to congratulate the President and Members on having so successfully commenced the important duties entrusted to them.

2. His Excellency in Council has observed with gratification from Dr. Bryden's Statistical Returns that the death rate of European soldiers in this Presidency has been for a series of years gradually decreasing; so that not only is the high rate* of mortality in India quoted by the Royal Sanitary Commission now a thing of the past, but the sanguine expectations indulged last year of the further reduction of the rate, to that which obtained amongst the troops in England before the recent sanitary improvements had been introduced, have been more than realised during the past year.

69 per 1,000 men annually.

3. Whilst aware that this improvement must be attributed in part to the altered constitution of the army, the short periods of service, and different conditions of invaliding, the Governor General in Council quite agrees in the opinions expressed by the President as to the great advantages that must result from every improvement in the local sanitary condition of the European force serving in India. He therefore deprecates any relaxation of vigilance over the sanitary arrangements now in force; and he is prepared to give ready support to any of the Commission's suggestions in that direction whenever it can be shown that they are practicable, and that the arrangements for carrying them out are complete.

4. The climatic influences to which the Commission refer must necessarily, his Excellency in Council observes, be borne in mind in carrying out much of what is proposed to be done for sanitary purposes in India; and it must not be forgotten that the measures so successfully employed to reduce mortality in England do not so directly influence those causes of sickness which are peculiar to a tropical country.

5. Some of the measures commenced or contemplated seem to his Excellency in Council deserving of a few remarks.

6. It has been determined that barracks and hospitals shall be double-storeyed; and this, it is hoped, will render the men less liable to the fevers so frequent in this country and so injurious in their effects.

7. Experiments are also being made with the view of discovering the best method of cooling the air in barracks during the long days in the hot weather and rains, and of renewing the stagnant air at night; and, if these are successful, much more relief from the heat that punkahs can secure will be afforded to the men, who will also be able to sleep in greater comfort, breathing a purer atmosphere. The necessity of putting sufficiently thick roofs on the upper storeys of the barracks to lessen the heat so often complained of will not be overlooked.

8. The increased barrack accommodation which it has been determined to provide in the hills, for both regiments and convalescent depôts, as soon as the stations and sites can be selected, will also, there can be no doubt, have a beneficial effect on the health of the European force.

9. Nor should the successful operation of the rules laid down for dealing with epidemic cholera, &c., be overlooked. Experience leads to the conclusion that by attention to them epidemic outbreaks may be most successfully combated; and measures similar to those they prescribe have proved of essential service on several occasions of outbreaks of typhoid fever in some of the gaols in the North-western Provinces and the Punjaub.

10. The success which has already attended the measures adopted in some stations for checking the spread of venereal disease amongst the European soldiers

soldiers is also worthy of notice, as warranting an extension of the system to the other stations of the army; due attention being paid to local circumstances and local prejudices.

11. The analysis of the water which it has been proposed to make at the different stations of the army is another question which will deserve attentive consideration, and the importance of which has recently been indicated by the discovery, in the water of the wells in several of the principal cities in Upper India, of much organic matter, the presence of which must seriously endanger the health of the community at all times, especially during the prevalence of epidemic disease. The importance of unremitting watchfulness and care to preserve the drinking water in a state of purity, in a country in which the wells are so exposed to contamination, owing to the habits of the people, can scarcely be overrated.

12. The Governor General in Council concurs generally in the remarks of Dr. Gordon, which the Commission have adopted, relative to the necessity of consulting the instincts and tastes of the men in the diet which is supplied to or made available for them. Fortunately, in India the prices of the supplementary articles he may crave are so low that it is in the power of every soldier to gratify his peculiar tastes by purchasing them. His Excellency in Council is satisfied of the justice of the Commission's remark that "when the orders issued by Government during the past year have been completely carried into effect, hardly anything will remain to be done," which Government could with propriety do, "for the improvement of the diet of the troops." For clearly exceptional circumstances rules would be unsuited; they must be considered and specially provided for as they arise.

13. With reference to that portion of the Report which relates to the civil population, the Governor General in Council observes that the attention of the Commission has been and should continue to be directed to effecting, in direct communication with the civil officers, an improvement in the sanitary condition of the cities and larger villages, especially of those in the neighbourhood of civil and military stations; and it appears to his Excellency in Council that, by diffusing amongst the people information on the character and progress of contagious diseases, the Commission might aid considerably the measures of prevention which the people might themselves desire to take in accordance with their customs and circumstances, by guiding them in the right direction.

14. The health of the prisoners in gaols, amongst whom the mortality is far greater than it should be, has, the Governor General in Council remarks, very properly engaged the attention of the Commission. The result of the experimental increase in the food of this class, which has lately been made in the Punjaub, should be carefully noted; as, whilst the diet should not be such as to render a residence in gaol desirable, it should be sufficient to fit the prisoner to resist the depressing influences of confinement and to bear well the labour now generally enforced in all gaols.

15. The standard quantity of food should depend on the amount usually consumed by the inhabitants of the district whence the prisoners come, and the variety determined by the known effect of the changes necessary for the maintenance of health. And, as the diet of no particular province can be held to be applicable to the whole country, the numerous nationalities and varying climates of India requiring very different amounts and constituents of food, information as to the food of the people, which is as yet but imperfectly before Government, should be diligently sought for.

16. The Governor General in Council deeply regrets that so high a rate of mortality from epidemic fever should have occurred in some of the gaols in the North-western Provinces and Punjaub; for the very necessities of punishment, which require that criminals should be congregated in considerable numbers in one place, and which thus offer, so to speak, facilities for the spread of contagious disease, render possible a far more effective control over their sanitary condition than could be exerted over that of a community of free men. The entrance of epidemic disease into a gaol may be often prevented; and its existence there should at any rate be almost at once recognised by the medical officer, when means should be immediately adopted for removing the prisoners from the infected

gaol, in such a way as to avoid the communication of the disease to the villagers, and through them to any neighbouring cantonments, or for separating the healthy from those affected.

17. The success of these measures depends entirely on the promptness and efficiency of the arrangements made by the local officers; and the Sanitary Commission will, His Excellency in Council has no doubt, aid Government in seeing that no exertions are spared to prevent in future the occurrence of a high rate of mortality from epidemics in gaols.

18. The Report adverts to the sanitary condition of Calcutta, which has grown so rapidly into an immense city without sufficient care being taken to secure cleanliness and proper ventilation. Some good has already been done and energy been infused into existing machinery; but very much more remains to be done to render the city healthy, and this question still demands the most earnest attention of the Commission. An accurate registration of deaths, which would point out the localities most defective in sanitary arrangements, is, His Excellency in Council remarks, still much needed.

19. The great difficulty to be surmounted in effecting sanitary improvement is, doubtless, the apathy and want of interest in the subject of the people generally. But the diffusion, by lectures and other means, of a knowledge of the benefits of general cleanliness, and of the conditions of public health, will, it may be hoped, reach in time the better educated portion of the people at any rate, and secure their willing and active co-operation in the measures necessary for the prevention of disease and for securing the enjoyment of a higher state of health both to individuals and to the community generally.

EAST INDIA (SANITARY COMMISSION, &c.)

RETURN to an Address of the Honourable The House of Commons, dated 25 May 1865;—*for*,

"COPIES of LETTER addressed to Sir *Charles Wood* in reply to DESPATCH of Government of *India* on REPORT of the ROYAL SANITARY COMMISSION for *India*:"

"And, of REMARKS of Barrack and Hospital Improvement Commission on Dr. Leith's Report as to the Sanitary Condition of the Bombay Army."

Military Department, India Office, 26 May 1865.

T. T. PEARS, Major General, Military Secretary.

COPY of LETTER addressed to Sir *Charles Wood* in reply to Despatch of Government of *India*, on Report of the Royal Sanitary Commission for *India*.

THE MORTALITY OF THE ENGLISH ARMY IN INDIA.

To the Right Honourable Sir *Charles Wood*, Bart., G.C.B., Her Majesty's Secretary of State for India.

Sir,

THE Government of India, in a Despatch ordered by the House of Commons to be printed 6th March 1865, has urged against the Report of the Royal Commission on the Sanitary State of the Army in India, some charges which require notice.

The Despatch is dated 8 December 1864, and referring to the state of things at that date, and to the returns more particularly of the mortality of the army in the three years 1861, 1862, and 1863, seeks to prove that the Commission had (1) overstated the mortality of the European forces in India; had (2) "referred but little to the many efforts made by successive Governments and Commanders in Chief, and especially of the present Commander in Chief," to improve the condition of the British soldier; and had (3) accepted erroneous opinions to the effect that the sites for cantonments had been selected without care, and often by chance. Despatch, ss. 58 and 61. Despatch, s. 44.

In this paper it is proposed to show:—

(1.) That the principal cantonments of the English Army were on some of the unhealthiest sites in India.

(2.) That the Commission did no injustice to the Commanders in Chief, or to the Government.

(3.) That the mortality of the European forces in India, at the date of the inquiry, was not overstated by the Royal Commission. It has been, on an average, at the rate of 69 per 1,000 down to the year 1856, and was higher in the excluded mutiny years.

(4.) That the Indian Government, writing on 8 December 1864, by avoiding any reference to the actual facts, citing a return for 1863, and mistakenly applying the "now" of one date to a different date, produces an erroneous impression, but does not disprove the above proposition.

(5.) That at the same time they admit by their argument the previous waste of life in India, and the possibility of reducing the mortality for the future to the rate of 20 per 1,000, or still lower by judicious measures.

Excellency the Governor General, the Despatch states, agrees with the Commission that the sites have been badly selected, and in a Minute accompanying the Despatch, he has given eight striking examples, all falling within his personal cognizance, in proof that sufficient care had not usually been exercised, even in recent times, in selecting the sites for military cantonments in India.

Sir John Lawrence gave evidence to that effect before the Royal Commission, and in his opinion all the principal witnesses concurred. The evidence supplies innumerable circumstantial examples, which it is unnecessary to cite, as they may all be summed up in one simple statement.

India is a vast territory extending over several degrees of latitude, at various altitudes, ranging from the inundated plains and deltas of great rivers to the Himmalayas and the table lands of the Deccan. Up to the date of the conquest of the Punjab and the annexation of Oude, the bulk of the European troops in Bengal were in cantonments on the unhealthy plains. Many of the old stations were as badly selected as possible in regard both of air and water; and as the new stations could not be worse, the Government of India has no difficulty in showing that they are better than those it adopts as its standard.

That this standard is not high is evident from the observations on Meean Meer, of which the defects are commented on by the Governor General, and described in the evidence. "Cholera," the Despatch says, "has appeared at Meean Meer in 1856 and 1861 with intense severity, producing a very high rate of mortality, but it does not appear that the place should be utterly condemned, for in 1863, when cholera was absent, the death-rate was only 10·27 per 1,000."

By the same reasoning, the worst stations on the West Coast of Africa may be vindicated where the death-rate is often low when epidemics are not raging.

The evidence and the returns, in two folio volumes, go to show that much of the high mortality of the English troops in India, in past years, was due to the bad choice of stations.

The Royal Commissioners appointed on 31 May 1859, under Lord Derby's Government, had the advantage of examining in England, orally, Sir John Lawrence, Sir Charles Trevelyan, Sir Ranald Martin, Sir Alexander Tulloch, and others, in all 48 witnesses of the highest authority, at intervals between 25 November 1859, and 18 October 1861.*

Report of Royal Commission, vol. II. (folio edition.)

Vol. I., p. 347.

Vol. I., p. 528.

Vol. I., p. 585.

Vol. I., p. 757.

Three series of questions were sent to 175 stations in the three Presidencies, and the answers received in time from the commanding, engineering, and medical officers of 117 stations are printed in an appendix to the evidence; with observations on the said returns by Miss Nightingale; with statistics of the East India Company's army, extending nearly from its origin down to the latest date, by Dr. Farr, with statistics of Her Majesty's troops in India, by Dr. Balfour; and statistics of regiments which had served in India, by their commanding officers. Actuarial reports on the military and civil funds, as well as the papers by able Indian statists, such as Henderson, Hannyngton, Macpherson, Ewart, and Chevers, were consulted.

All who have had to do with military statistics know the difficulty of getting any accurate numerical statements whatever respecting the strength and losses of armies. How many men were engaged, killed, and wounded, on both sides, at Waterloo, is not yet settled. French and English military historians largely differ.

The Royal Commission encountered difficulties of various kinds, but they succeeded in obtaining access to two classes of documents, which were perfectly trustworthy, and supplied the data from which they deduced the mortality of the English troops in India. Sir Alexander Tulloch gave, in his evidence from documents in the War Office, returns of the Royal army in India during the 39 years 1817 to 1855, showing that the mean strength was, during that period, 20,332, and that the registered deaths out of that strength were 55,584, or at the rate of 1,425 deaths

Report, vol. I., p. 319.

* The publication of the report was delayed until 19 May 1863, to enable the Commission to include the tardy returns from India, many of which never came to hand.

1,425 deaths annually. Hence he inferred that the mortality of the Royal Army in India had been, during a series of years sufficiently long to furnish an average, at the rate of 70 deaths per 1,000 of strength annually. It is a simple rule-of-three sum, and it will be found, upon repetition, to be a fraction over 70.

Sir Alexander Tulloch's facts are authentic, and his calculation is correct, but it does not include the deaths among invalids shipped home and dying on the voyage of mortal diseases. According to his estimate, about 10 of the 70 annual deaths are accounted for by casualties in the field.

The regiments of the Royal Army had depôts of two companies each at home, and they served for only limited terms, and dying invalids were omitted, so that the real mortality of the Queen's troops in India was, to some extent, masked. The Royal Commission therefore procured from the India House, and analysed the annual Casualty Rolls of the late Company's European troops who served their full term in India. The rolls were "compiled upon the principle of accounting for every man becoming ineffective in the year." From these rolls the mortality for each Presidency was calculated year by year, and the general result may be thus summed up. The deaths in 57 years upon a mean strength of 10,330 were 40,420, or 709 annually; consequently the mortality had been at the rate of 69 deaths annually in 1,000 of strength. Thus, putting the non-commissioned officers and men of the Royal Army and the Company's European troops together, the strength was about 30,662, the annual deaths 2,134, and the annual mortality at the rate of nearly 70 in 1,000.

Report, Vol. I., p. 531.

Why did the Royal Commission, appointed in 1859, not include in its investigations all the returns of later years?

For two reasons: (1) the returns of later years, they were told, did not exist at the India House, and were not supplied from India; (2) the mutiny had produced so much disturbance, and led to so extensive a destruction of life, that these were exceptional years. The Commissioners knew enough to be certain that the mortality in those years was excessively high, as was evident from the regimental returns with which they were supplied by the colonels of 78 regiments serving in India. The mortality of those regiments during the four years 1857 to 1860 was at the rate of 77 * in 1,000.

Report, vol. I., pp. 757–79.

The Commission, therefore, concluded from the whole series of returns, that "the death-rate of the British soldier, since the first occupation of the country down to the present day, has oscillated round 69 per 1,000." The last accessible returns, and the experience of the mutiny, were in strict conformity with this statement.

With a strength of 30,662 English soldiers, who sufficed for all purposes, England had lost for years 2,134, or 69 per 1,000 men annually by death; but, from the returns of 1861, the Commission learnt that there were 75,759 men (including non-commissioned officers) in India, besides 8,324 officers. The proposed European establishment was to comprise 73,000 men, or a third part of the British Army; of whom, at the rate of 69 per 1,000, the loss by death would be 5,037 annually.

Report, vol. I., p. lxxxv.

Report, vol. I., p. lxxxi.

The sick in hospital by one estimate would be 7,300, by another 6,132. This was an alarming prospect to the country, and distressing, inasmuch as the deaths out of the same number of men at the soldier's age is only 657, or at the rate of 9 per 1,000.† Instead of losing 657 lives annually, there was a well-grounded fear that should years of war, and cholera, and fever, and dysentery, and liver disease recur, as they had in past times, England might be called upon to supply the places of 5,037 dead soldiers by 5,037 recruits. This it was felt would, in addition to other casualties, be a strain upon the military resources of the country.

The returns, the Despatch truly says, included the deaths in war. They were intended to include those deaths; for neither the recent wars nor the mutiny were at that date forgotten in England; and the Commission would not have been justified in basing its calculations upon a future of unbroken peace in Asia.

But

* *See* reply of Barrack and Hospital Improvement Commissioners to Dr. Leith, p. 9.

† The Despatch does not advert to the specific objects for which the "natural standard" mortality at the soldier's age and in the army at home and abroad are cited in the Report, yet these objects are clearly stated. Vol. I., p. x.

But the Commission enquired carefully into the effects of war, as efficiency in the field is the supreme test of an army's sanitary organization. And they showed that the mortality in the wars of India had been chiefly from spirits, fever, dysentery, and cholera, to which the troops were often unnecessarily exposed, as was notoriously the case in Lord Amherst's Burmese War, when British "soldiers perished by hundreds in the swamps of the Irrawaddy." Due credit is given to the Indian Government for the improvements in the sanitary arrangements which reduced the mortality in the Afghan and Sikh campaigns.

Despatch, s. 10.

Report, vol. I., p. xvi.

Some of the heaviest losses occurred in time of peace, and to regiments when they were not in action. The following is an example. All the Bengal regiments enter India at the stations about Calcutta, Fort William, Dum Dum, Barrackpore, and Chinsurah. The 29th regiment of foot arrived 1,004 strong in India on 29th July 1842; at Chinsurah it lost 106 men in eight months; at Ghazeepore and Meerut 418 men in the two next years, before it had seen an enemy: its valour was not extinguished, for 141 of the men were killed or died of their wounds in the Sutlej campaign, and 48 in the Punjab. It lost 1,661 men in all by death in India, and sent home 461 invalids, &c., before it embarked with a strength of 824 for England on 30th September 1859.

Report, vol. I., p. 759. Return of Colonel Westropp, commanding 29th Regiment.

Another example will suffice: "Hyderabad, the capital of the Nizam's dominions, is on high land near the centre of the Deccan; it is surrounded by fine sites, but the barrack for the European regiments is in an unhealthy locality at Secunderabad. A regiment, of which the mean strength was 753, died at the rate of 64 in 1,000 annually; in one year a third of the force was killed, and the deaths in the 30 years (1804 to 1833), chiefly by dysentery, were about 1,435. The barracks were emptied twice by deaths in 30 years; and the graveyard close above the barrack was filled, for a crowded barrack crowds the churchyard. New barracks were erected on the same site, and the mortality declining still remained as high as 37 in 1,000 during the years 1837 to 1858. In the last year of the period, 104 of the First Royals died, out of a strength of 1,098. The officers lived in detached bungalows, and their mortality rarely exceeded 20 per 1,000."

Report, vol. I., p. xxvii. This station is well described by Dr. Maclean in his evidence, and by Dr. Crawford, in the Army Medical Report for 1860.

Besides the loss by death, other casualties had to be taken into account; and, preferring to understate rather than to overstate the case, the Commission selected the 10 years, 1847 to 1856, before the mutiny, embracing Lord Dalhousie's administration, when the mortality of the Company's English troops in India was at the rate of 51 (not 69) in 1,000, that is, lower than it was in the previous decennials through the reduced mortality in Madras and Bombay. In Bengal no improvement was visible. The soldier's life table was calculated upon this reduced rate, and it showed that 1,000 of the Company's European soldiers of the age of 21 years were reduced to 216 through death and invaliding alone by 20 years' service in India, while they were reduced to 96 by transfers, desertions, and casualties of all kinds.

Report, vol. I., p. lxxxvii.

Her Majesty's 84th Regiment experienced a comparatively low rate of mortality; yet of 1,064 men landed at Moulmein in 1842, only 93 landed in England in 1859; of the number joining and the losses, Brigadier General Russell, C.B., gave in his evidence an exact return. In 1857, the year which the Commission omitted, this regiment lost 274 men.

Report, vol. I., p. 233.

Thus the prospect was not encouraging when the Commission commenced its enquiries. And as no one doubted the good intentions of the old Military Board, few were so sanguine among old Indians as to expect that the European troops would ever escape from the diseases for the future which had decimated them in the past. Some of the best medical officers, however, held other opinions.

The first great fact which struck the Royal Commission forcibly was this: the civil servants of the Company at the soldiers' age did not die at a rate higher than 20 in 1,000; and as they are distributed all over the country, it follows that the climate of India is not necessarily fatal to any higher proportion.

Report, vol. I., p. xxi.

The mortality of the military officers who were stationed with the British and native troops all over India had been high (38); but it had been less by 31 than the mortality of the European soldiers. The mortality of the British soldiers in many stations did not exceed 20 per 1,000, and half of this was by diseases resulting from defective sanitary arrangements. The mortality of the native troops did not exceed 20 in 1,000 under many unfavourable conditions; and the mortality of Indian cities is not higher apparently than that of Euro-

Report, vol. I., p. xix.

Report, vol. I., p. xxii.

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pean cities in the same unhealthy condition. In the 17th century, London, chiefly in summer and autumn, suffered from the same diseases as Calcutta—fever, dysentery, cholera, and the plague periodically in addition.

"The experience of the civil service, of the military officers, of their wives and children, of the English troops in many stations, and of the native troops, proves," the Commission concluded, "that in the present state of India the mortality of the English troops there can be reduced to 20 in 1,000." Report, vol. I., p. xxix.

India is undrained; there is no adequate arrangement for the supply of pure water; and malaria pervades nearly the whole country, as it formerly pervaded England. Looking into the future, when India is cultivated and the sanitary organisation of the army is brought to a level with the present state of science, the Commissioners add, "We cherish the hope of realising what statistical inquiries appear to point to, namely, that the natural death-rate in times of peace of men of the soldiers' ages in India will be no more than 10 per 1,000 per annum." Report, vol. I., pp. lxxxi–ii.

The Commissioners collected from the most competent witnesses in England and in India evidence of the sanitary evils to which the English army in India had been exposed; analysed the causes of disease with the help of science; and suggested what it was conceived were effectual remedies in 40 explicit recommendations.

They did not conceal from the public—for it would have been contrary to their duty and to the English practice—the expense in blood, in suffering, and in treasure, at which England had "held dominion there for a century." But while it was their painful duty to expose past and still existing abuses, they had the gratification of being able to point out remedies which, in their belief, were likely to prove effective, and thus to hold out the prospect of a brighter future for the English soldier in India.

The Indian Government does not question the authenticity of the documents upon which the Royal Commission relied, neither does it at all dispute the accuracy of the calculations; and we, as members of the late Commission, whose conclusions we are seeking to defend, willingly admit without questioning, the accuracy of the facts and figures which are brought forward by the writers of the Despatch. The controversy turns almost wholly upon dates, and on the application of the word "now".

Writing at the date of 8 December 1864, the authors of the Despatch show that in the year 1858 "no less than 111 per 1,000 died (in Bengal) during a year of arduous service, as far as fatigue and exposure were concerned, the number of casualties in action, or as the effect of wounds, being *not a thirteenth* of the whole." Despatch, ss. 12 and 13. The mortality fell to 45 in 1859, to 36 in 1860, to 45 in 1861, to 27 in 1862, and to 22 per 1,000 in 1863, a year of peace. "In this Presidency," the writers say, "it will be seen that the rate of mortality, so far from being *at present* 69 per 1,000, is not much more than the rate of 20 per 1,000, hoped for by the Royal Commission as the result of very improved sanitary arrangements." Despatch, ss. 36 and 37. Despatch, s. 38.

They show a still more favourable state of things in Bombay and Madras.

"We hope," they conclude, "it has now been satisfactorily shown that the *present rate* of mortality of the whole British Army in India is not much over 20 per 1,000; and we entertain a confident hope that by constructing improved barracks, and, as railway communication becomes more developed, by withdrawing troops from some of the less healthy localities, the mortality will ordinarily be even less than 20 per 1,000." Despatch, s. 111.

It will be exceedingly satisfactory to the public in England and in India thus to see the predictions of the Commission—predictions which at the time appeared somewhat sanguine even to their authors—endorsed by the Government of India.

The "now" of the Despatch dated at the end of 1864 really means the year 1863, to which their latest returns refer: the "now" of the Royal Commission was 1858 and the years preceding,—not through their own fault, but through the impossibility of obtaining returns from the India Office and Horse Guards for years later than 1856, except the regimental returns of 1857, 1858, and 1859, years of war, of exposure in the field, and consequent disease.

It is sometimes the fate of Royal Commissions to see none of their recommendations carried out. This fate has not befallen the Royal Sanitary Commission for India. As soon as, and in some places before, they were appointed, and

had sent out a series of searching queries to all the principal stations, the authorities set about abating and removing many of the evils which were to be described and published to the world. The Commander in Chief has acted with the most praiseworthy zeal; and the army of the Bengal Presidency, risen out of the trough of the Ganges, occupies the healthier regions of Oude and the Punjaub; several measures described in the Despatch have been carried out; new statistical forms have been introduced; and in conformity with the directions of the Secretary of State for India, accompanying the report of the Royal Commission, a permanent Sanitary Commission has been appointed in each Presidency. The statistical returns are now brought down to recent dates; it is incredible how much they were in arrear when the Commission sat. We have now before us a return for the calendar year 1864: the mortality of the Bengal Presidency was at the rate of 21 in 1,000, ranging from 25 to 27 on the Ganges stations, to 17 in the Oude and Agra commands, and 15 in the Punjab.

Despatch, 559.

Despatch, ss. 36 and 37.

In the same Presidency, according to the Despatch, the mortality rate was 22 per 1,000 in 1863, 27 in 1862, 45 in 1861, with "a fearful outbreak of cholera," 36 in 1860, 45 in 1859, and 111 in 1858, the year immediately preceding the appointment of the Commission. Thus going backwards, we have a rapidly ascending series, which conducts us to the long period when the facts demonstrate that the annual mortality of the Queen's army was at the rate of 70, of the Company's forces at the rate of 69 in 1,000.

The report of the Royal Commission explicitly states the years in which the mortality was at the rate of 69 per 1,000; and its "now" applies to the years ending with the mutiny. The latest information was for the single year 1860. The mortality given was based upon what had been the case during a long series of years. The Commissioners traced the excessive death rate to its obvious causes, and predicted that, under given conditions, in times of peace, it would fall to 20 in India, and may reach 10; the mortality of men of the soldiers' age at home being at the rate of 9 per 1,000.

It does undoubtedly appear, upon the face of it, incredible that the death rate of the soldier, which was 22 and 21 in Bengal during the two years 1863 and 1864, should have oscillated round 69 since the first occupation of the country down to the day of the latest returns which the Commission could procure.

The facts are, however, incontestable; they are fully explained by the circumstances; and the writers of the Despatch are scarcely justified in the representation that the Commission stated the mortality to be "now" (December 8th 1864) at the rate of 69 in 1,000; as the dates of the inquiry and the returns are given in the report. Still less do the facts justify them in the use of the phrase "inaccuracy of the death-rates laid down by the Commission."

The change from long periods to the limit of 10 years' service in the Queen's army, has tended of late years to reduce the apparent rate of mortality in India inasmuch as unhealthy men are got rid of when their term of service expires, and only the healthy, well-behaved, seasoned soldier remains, if he chooses to volunteer for a further term.

Despatch, s. 62.

In addition to the loss by death, there was the great loss by invaliding of 81, 74, and 60 per 1,000, in the three several years of 1860-62.

Despatch, s. 29.

But the great and satisfactory fact remains, that in 1862 "we have," the Despatch informs us, "1,408 deaths in an army of over 70,000 men;" while in the previous half-century the annual average loss was 2,135 deaths on a force of 30,662 men! Nor does it appear that so many as 1,460 men died in 1863

Despatch, s. 30.

"out of an establishment of nearly the strength (73,000 men) estimated by the Commission."

"The hope of the Sanitary Commission, that by improved sanitary arrangements the death-rate may be reduced to 20 per 1,000, and thus only 1,460 recruits be needed annually to replace death vacancies in India, was practically realised before the publication of their Report."

The inquiry of the Commission was silently working its way through every station in India, from May 1859 to May 1863, and now, at the end of 1864, this we are told is the state of things: the death-rate was 69; it is 20. People in India are now ready to believe that the mortality which, before the inquiry commenced, was held to be inevitable is now incredible: for this change in

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TABLE A.—STATISTICS of REGIMENTS which have served in *India* during the Years which the Commissioners did not include in their Estimate of the Mortality.

(The Returns are by Commanding Officers of Regiments, and are given in detail in the Report of the "Royal Commission on Sanitary State of Army in India," Vol. I., pp. 757–779.)

REGIMENT OR CORPS.	1857.		1858.		1859.		1860.		1861.	
	Strength on 1 April.	Deaths in previous Year.	Strength on 1 April.	Deaths in previous Year, 1857–8, 1 April.	Strength.	Deaths.	Strength.	Deaths.	Strength.	Deaths.*
14th Hussars	656	7	706	18	630	62	–	–	–	–
24th Regiment (1st Battalion)	952	79	954	105	1,141	27	1,058	16	633	11
29th Regiment	949	69	913	37	–	–	–	–	–	–
32d Regiment	742	82	510	384	–	–	–	–	–	–
78th Highlanders (Persian Ex. 1856–7)	–	–	756	223	540	48	–	–	–	–
93d Regiment	940	18	1,006	45	1,101	54	1,048	30	965	18
84th Regiment	918	29	803	280	–	–	–	–	–	–
64th Regiment (Persian Ex. 1856–7)	1,088	237	852	39	1,228	24	993	12	–	–
10th Regiment (1st Battalion)	898	30	796	128	–	–	–	–	–	–
8th Regiment (1st Battalion)	891	40	845	175	870	56	–	–	–	–
86th Regiment	937	40	977	90	–	–	–	–	–	–
70th Regiment	745	117	963	82	975	59	915	18	–	–
9th Lancers	611	13	547	107	309	41	–	–	–	–
87th Regiment	890	58	889	58	943	58	1,036	27	–	–
53d Regiment	1,093	35	961	106	863	13	807	64	–	–
75th Regiment	937	22	816	228	1,091	39	1,039	27	951	57
60th Regiment (1st Battalion)	882	194	789	43	900	61	–	–	–	–
52d Regiment	871	63	888	25	1,204	12	1,131	13	–	–
61st Regiment	945	27	787	284	885	44	–	–	–	–
81st Regiment	1,047	170	1,044	32	1,074	41	–	–	–	–
43d Regiment	1,094	50	1,041	31	979	116	950	26	969	11
74th Highlanders	978	22	972	18	1,065	40	911	27	932	13
27th Regiment	930	33	988	140	935	34	1,040	12	1,042	22
35th Regiment	656	66	933	66	934	187†	959	38	1,162	19
6th Dragoon Guards	–	–	632	71	661	28	659	13	–	–
12th Lancers	610	3	644	20	608	52	404	34	–	–
37th Regiment	–	–	841	121	705	36	862	37	998	84
5th Regiment (1st Battalion)	–	–	–	–	663	88	828	104	805	38
90th Regiment	–	–	–	–	–	–	858	32	929	25
33d Regiment	–	–	–	–	1,233	12	1,162	41	991	64
89th Regiment	–	–	–	–	979	38	1,058	81	–	–
23d Regiment (1st Battalion)	–	–	–	–	1,191	107	1,046	53	1,166	23
12th Regiment (1st Battalion)	–	–	–	–	1,058	98	917	61	989	36
82d Regiment	–	–	–	–	1,112	104	1,039	31	1,153	27
34th Regiment	–	–	–	–	730	83	1,175	58	–	–
1st Regiment (1st Battalion)	–	–	–	–	1,079	120	1,279	43	1,013	18
42d Highlanders	–	–	–	–	961	123	1,009	20	990	23
95th Regiment	–	–	–	–	1,047	50	1,037	32	985	38
88th Regiment	–	–	–	–	916	118	961	43	1,000	25
2d Battalion Rifle Brigade	–	–	–	–	1,043	113	1,106	48	1,133	18
3d Battalion Rifle Brigade	–	–	–	–	1,069	141	1,156	29	1,047	79
3d Dragoon Guards	–	–	–	–	701	16	663	30	657	14
1st Dragoon Guards	–	–	–	–	605	9	704	11	699	25
38th Regiment	–	–	–	–	982	176	1,059	40	1,014	22
19th Regiment (1st Battalion)	–	–	–	–	1,108	87	965	65	905	
20th Regiment (1st Battalion)	–	–	–	–	1,015	123	964	56	975	17
97th Regiment	–	–	–	–	799	139	1,013	93	986	35
7th Regiment (1st Battalion)	–	–	–	–	1,222	68	1,182	30	1,254	19
93d Highlanders	–	–	–	–	911	42	1,069	41	1,098	1
2d Dragoon Guards	–	–	–	–	604	112	605	22	585	29
44th Regiment	–	–	–	–	1,139	33	1,176	18	–	–
7th Hussars	–	–	–	–	546	112	723	19	737	19
79th Regiment	–	–	–	–	949	165	967	25	1,016	12
60th Rifles (3d Battalion)	–	–	–	–	1,178	24	1,176	13	934	23
72d Highlanders	–	–	–	–	1,061	48	892	23	968	15
66th Regiment	–	–	–	–	1,270	18	1,204	25	1,036	9
8th Hussars	–	–	–	–	559	41	711	24	704	19
69th Regiment	–	–	–	–	969	29	974	38	1,010	9
51st Regiment	–	–	–	–	1,188	33	1,148	46	1,070	19
7th Dragoon Guards	–	–	–	–	568	39	601	9	645	15
94th Regiment	–	–	–	–	1,081	46	1,125	31	1,023	15
98th Regiment	–	–	–	–	991	17	1,046	17	–	–
80th Regiment	–	–	–	–	858	67	838	22	–	–
56th Regiment	–	–	–	–	792	21	976	51	924	30
54th Regiment	–	–	–	–	1,057	141	1,004	47	1,011	52
17th Lancers	–	–	–	–	568	21	599	74	632	28
71st Light Infantry	–	–	–	–	967	65	907	40	868	106
18th Regiment (1st Battalion)	–	–	–	–	1,179	61	1,031	18	992	4
6th Regiment (1st Battalion)	–	–	–	–	679	148	798	43	951	32
92d Highlanders	–	–	–	–	1,150	65	991	22	–	–
68th Regiment	–	–	–	–	1,261	13	1,202	25	1,112	9
77th Regiment	–	–	–	–	–	–	934	51	877	116
46th Regiment	–	–	–	–	–	–		18	1,085	14
6th Dragoons	–	–	–	–				13	702	5
91st Regiment	–	–	–	–				27	1,090	30
48th Regiment	–	–	–	–	–	–		71	979	40
4th Regiment (1st Battalion)	–	–	–	–	–	–	991	37	933	50
73d Regiment	–	–	–	–	765	49	765	34	761	4
TOTAL	21,260	1,504	22,853	2,956	61,534	4,355	62,687	2,329	50,029	1,526

Note.—It is not clear whether the Deaths in this Return always refer to the military year ending April 1. No satisfactory information on that head could be procured from the Adjutant General's Office, to which application was made.

* The Returns of Deaths for this year are imperfect; the regiments not having remained in India during the whole of the military year, their deaths during a portion only of the year were returned. Thus the 93d Highlanders, 1,093 strong, return 1 death; that is, in a week or so.

† 101 killed in action.

EAST INDIA (BOMBAY) ARMY.

COPY of Remarks of the BARRACK and HOSPITAL IMPROVEMENT COMMISSION on a REPORT by Dr. *Leith* on the GENERAL SANITARY CONDITION of the BOMBAY ARMY.

(*Colonel Sykes.*)

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